INDIA

RUBBER WORLD

NATURAL & SYNTHETIC

DECEMBER, 1945

TECHNOLOGY DEPT.

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Exceptional Uniformity

Sterling-L

GODFREY L. CABOT, INC., BOSTON

Newsletter No. 12
DECEMBER, 1945

Published by Rubber Chemicals Division of DU PONT

RPA No. 5

FOR EFFICIENT BREAKDOWN OF GR-S

WARTIME experience with RPA No. 5 as a plasticizer for GR-S confirmed that it aids materially in reducing breakdown time, thus increasing processing capacity.

RPA No. 5 is a chemical peptizing agent which is added to GR-S during mastication. Some of the desirable effects are:

1. Leveling out of lot-to-lot variations in GR-S.
2. Reduction in breakdown time.
3. Smoother processing.
4. Less heat developed.
5. Broader temperature range of good processing.
6. Lower minimum processing temperature.
7. Better extrusion properties.
8. Faster extrusion.
9. Less swell of extruded stock.
10. No effect on hardness or other properties of cured stock.

IMPROVED EQUIPMENT EFFICIENCY—The immediate practical advantage of plasticizing GR-S with RPA No. 5 is the greatly increased breakdown capacity. In one case plasticator capacity was increased by 83%, and Banbury breakdown capacity 100%.

The effect of RPA No. 5 continues through subsequent operations so that the slightly tougher GR-S from one pass through the plasticator with RPA No. 5 gives as soft, finished stocks as the 2-pass GR-S without RPA No. 5. Lower power consumption and stock temperatures are evident throughout. With the lower temperatures better quality stocks should result.

AMOUNT OF RPA No. 5 TO USE—The proper amount of RPA No. 5 to use depends on such factors as (1) the type of masticating equipment employed, (2) the properties of the particular GR-S in question and (3) the end results desired. For most purposes we suggest the use of the amounts indicated below:

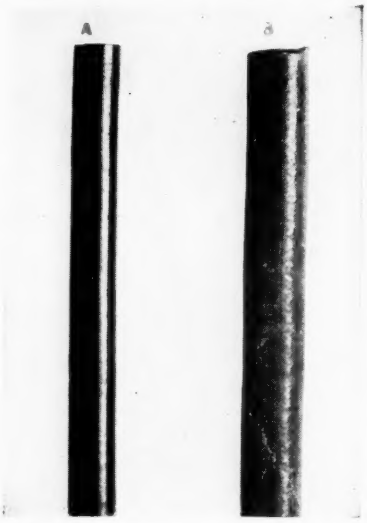
Masticating Equipment	% RPA No. 5 on GR-S
Mill	1.00—2%
Banbury	0.50—2%
Gordon Plasticator .	0.25—1%

EFFECT ON CURE—Experimental data are inconclusive as to the effect of higher quantities of RPA No. 5 on the rate of cure of GR-S stocks. There are indications that stocks accelerated with Thionex, MBT, MBTS or DPG are slightly retarded by 2% of RPA No. 5. With activated accelerators such as SRA No. 2, Zenite B, MBT-DPG and 2MT-Accelerator 808, the vulcanizates have slightly lower modulus, equal tensile strength and higher elongations at break. With 0.5% of RPA No. 5 there is essentially no effect on the physical properties of the cured stock.

HEALTH HAZARDS—Although experience to date indicates that it is much less likely to cause dermatitis than either RPA No. 2 or RPA No. 3, which are widely used in the industry, nevertheless we recommend following the same precautions as with the other RPA's. Workmen should wear long sleeved shirts and gauntlet gloves, and should wash thoroughly any parts of the body exposed to RPA No. 5.

EXTRUSION OF GR-S TREAD STOCK

GR-S Masticated for 20 Minutes at 250° F. 500 Grams Elastomer—8x16 in. Mill



	A	B
Peptizing Agent .	1% RPA No. 5 Liquid	None
Temperature of Extrusion . . .	Low	High
Speed of Extrusion	High	Low
Swell on Extrusion	7%	55%

DU PONT

RUBBER CHEMICALS DIVISION

BETTER THINGS FOR BETTER LIVING . . . Through Chemistry

INDIA RUBBER WORLD, December, 1945. Vol. 113, No. 3. Published monthly by BILL BROTHERS PUBLISHING CORP., 386 Fourth Avenue, New York 16, N. Y., U. S. A. Entered as second-class matter December 27, 1944, at the Post Office at New York, N. Y., under the Act of March 3, 1879. Subscription, United States and Mexico, $3.00 per year; all other countries, $4.00; single copies, 35 cents.

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JAN 7 1946
DETROIT

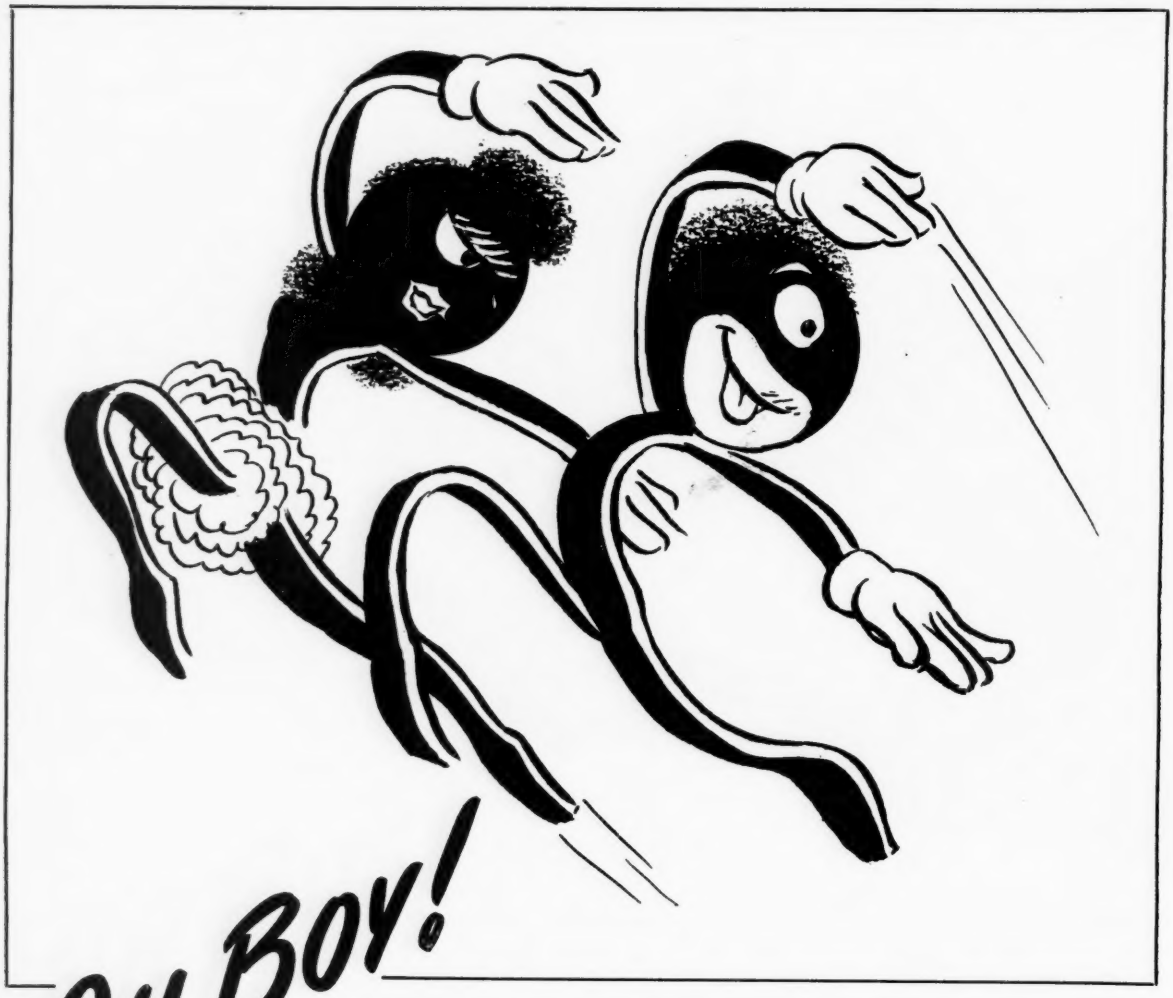
SETTING A NEW PACE IN RUBBER PRODUCTION

With continued emphasis on synthetics, the rubber industry is setting the stage for the most spectacular era of rubber production and application the world has ever known.

To match new materials and processes, more and more new machines are being developed—faster, more accurate machines. The designers of these machines know the importance of bearings; thus they are turning to the bearings that for over four decades have kept pace with every requirement; the bearings that have proved they possess the versatility, strength and endurance to master every assignment from precision machine tools to huge steel rolling mills—Timken Tapered Roller Bearings.

Specify Timken Bearings for your new equipment—and see that the trade-mark "TIMKEN" is stamped on every bearing you use. This is your assurance of getting the performance that has made Timken Bearings famous the world over. The Timken Roller Bearing Company, Canton 6, Ohio.

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS



WHAT A BOUNCING BABY!

And so are your rubber products, when made with Philblack A! They have higher resiliency, less permanent set, and that desirable "rubbery feel."

And there are other advantages that you get when this wonder-working black goes to work for you. Philblack A steps up resistance to abrasion, lowers heat build-up and makes possible easier and faster processing.

Yes, Philblack A has made life much happier for manufacturers of tires, tubes and other rubber products. Why not put Philblack A to work for you, too?

PHILLIPS PETROLEUM COMPANY

Philblack Division

FIRST CENTRAL TOWER BUILDING · AKRON, OHIO

BE COMPETITIVE IN QUALITY AND STILL HAVE LOW COSTS

Take advantage of:

1. Technical Service based on experience.

2. Efficient compounding materials.

***These you can get by calling on* NAUGATUCK CHEMICAL**

Naugatuck Chemical maintains a completely equipped rubber laboratory with a staff whose experience covers all branches of rubber goods manufacturing.

Naugatuck Chemical offers you a complete line of rubber chemicals including accelerators, antioxidants and special purpose products.

FOR QUALITY AND LOW COST INVESTIGATE

***ACCELERATORS* – BJF – MBT – MONEX**

***ANTIOXIDANTS* – BLE – AMINOX – BLE POWDER**

***SPECIAL PRODUCTS* – LAUREX – SUNPROOF**

PROCESS – ACCELERATE – PROTECT
WITH

NAUGATUCK CHEMICAL

Division of United States Rubber Company

ROCKEFELLER CENTER, 1230 AVENUE OF THE AMERICAS, NEW YORK 20, N. Y.

Here's a BALDWIN PRESS to help you increase production and improve your product

HY SPEED SEMI-AUTOMATIC PLUNGER MOLDING 50 to 300 TONS

SPECIFICATIONS
HY SPEED SEMI-AUTOMATIC PLUNGER MOLDING PRESS

Maximum Press Capacity	50 Tons	100 Tons	200 Tons	300 Tons
Die Area L to R, F to B	21" x 20"	24" x 20"	30" x 24"	36" x 24"
Minimum Daylight Between Platens	27½"	28"	31"	35"
Maximum Daylight Between Platens	33½"	34"	40"	44"
Thickness Upper Bolster	10"	10"	10"	10"
Thickness Lower Bolster	5½"	6"	6"	7"
Stroke	12"	12"	15"	18"
Overall Height	9'2"	9'7"	12'0"	12'0" Ext. Below Floor 2'0" Total Height 14'0"
Floor Space S to S, F to B	4'0"x3'6"	4'8"x4'0"	5'6"x5'0"	5'0"x3'6" Pumping Unit 3'8"x6'0"

With the largest markets in history ready, waiting and eager to buy, plants all over the nation are tooling up for top production . . . and no one can afford to be left behind. This Baldwin press offers the features you need, and delivery can be made promptly. The Baldwin Locomotive Works, Baldwin Southwark Division, Philadelphia 42, Pa., U. S. A. Offices: Philadelphia, New York, Boston, Washington, Chicago, Cleveland, St. Louis, Detroit, San Francisco, Houston, Pittsburgh.

OTHER BALDWIN PRODUCTS: Hydraulic presses, Testing equipment, Steel forgings and castings, Diesel-electric locomotives, Diesel engines, Metal plate fabrication, Rolled steel rings, Bronze castings, Heavy machine work, Crane wheels, Bending rolls, Plate planers, Babbitt metal, Alloy iron castings, Briquetting presses.

BLW THE BALDWIN GROUP

BALDWIN
SOUTHWARK
HYDRAULIC PRESSES

HYCAR helps shed light on a burning problem
Portable generator by Homelite Corporation. HYCAR part by Connecticut Hard Rubber Co.
IN many modern fire departments, portable gasoline driven motor-generator sets, like the one in the picture, power the floodlights that help firemen fight night fires. The heart of the engine that drives the generator is a highly sensitive needle valve, and the heart of the needle valve is a tiny resilient HYCAR seal upon which the entire performance of the unit depends. If the seal fails — the engine stops, lights go out, property and lives are farther endangered.
The seal spends its life soaked in a gasoline and oil mixture, yet it must not change shape or deteriorate in any kind of fuel. It must stay resilient over an extremely wide temperature range. There must be no sticking to the metal valve shaft.
HYCAR has all these properties as well as those shown in the list at the right. They suggest a wide variety of new uses in all industry. So ask your supplier for parts made from for test in your own applivere or routine, new or find that HYCAR is the use for long time, deeration. Hycar Chemical ron 8, Ohio.
CHECK THESE SUPERIOR FEATURES OF HYCAR
1. EXTREME OIL RESISTANCE — bearing almost unlimited stability of parts.
2. HIGH TEMPERATURE RESISTANCE—up to 250° F. dry heat; up to 300° F. hot oil.
3. ABRASION RESISTANCE—50% greater than natural rubber.
4. EXTREMELY COLD FLOW — even at elevated temperatures.
5. LOW-TEMPERATURE FLEXIBILITY — down to —65° F.
6. LIGHT WEIGHT—15% to 25% lighter than many other synthetic rubbers.
7. AGE RESISTANCE—practically unlimited by checking or cracking from oxidation.
8. HARDNESS RANGE—practically resistant to flow extremely soft to black hard.
9. IRON-ADHERENT TO METAL—compounds will not adhere to metals, even after prolonged heat, under pressure, when other compounds will readily adhere (when desired).
ycar
Reg. U. S. Pat. Off.
DUCER OF BUTADIENE TYPE
ic Rubbers

This ad should fire your customers' enthusiasm for HYCAR

HERE is another in the continuing series of advertisements addressed to *your* customers and prospects in every industry. Each month more than 1,000,000 readers of Newsweek, Business Week, United States News, and a long list of carefully selected business papers are exposed to messages like this, citing spectacular and routine applications for HYCAR, and urging customers and prospects to *ask their suppliers for parts made from HYCAR.*

We encourage these customers and prospects to take advantage of the economical, dependable product performance that they can get from this superior material. That, in turn, makes it possible for you to improve sales quality by selling *up*—instead of merely striving to meet so-called competition.

Outside of providing you with these versatile raw materials and offering laboratory aid in handling difficult applications, this is as far as we can go. We make no finished products.

But we plan to continue this long-range selling program for you and urge that you use it to help sell *quality* parts made from HYCAR. Reprints of all HYCAR advertisements as well as copies of our bulletin, "Everywhere in Industry," are available at no charge for use by your salesmen. Just write *Hycar Chemical Company, Akron 8, Ohio.*

Hycar

Reg. U. S. Pat. Off.

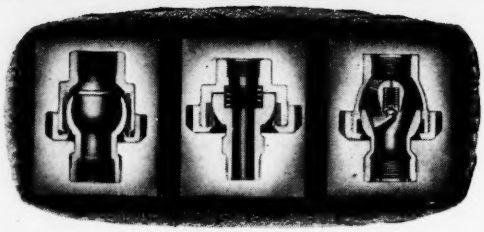
LARGEST PRIVATE PRODUCER OF BUTADIENE TYPE

Synthetic Rubbers

An Elephant can't do without a Flexible Trunk

...or Fluid Lines without BARCO Flexible Joints

Nature provides flexibility in every living, moving thing. Because there is always movement—vibration, expansion, contraction—in any fluid-conveying system, Barco Flexible Joints are needed to provide responsive, compensating movement through every angle. For over 30 years they have been accepted as the standard for such protection against strain and shock. For complete engineering information, write to Barco Manufacturing Co., Not Inc., 1810 Winnemac Ave., Chicago 40, Illinois.



BARCO **FLEXIBLE JOINTS**

Not just a swivel joint...but a combination of a swivel and ball joint with rotary motion and responsive movement through every angle.

FREE ENTERPRISE—THE CORNERSTONE OF AMERICAN PROSPERITY

In Canada: The Holden Co., Ltd., Montreal, Canada "MOVE IN EVERY DIRECTION"

NAFTOLEN
KNOWN THROUGHOUT THE WORLD AS A HIGH QUALITY PRODUCT
NOW AVAILABLE AS
NAFTOLEN MV
A product especially designed for
TIRE COMPOUNDS AND SIMILAR APPLICATIONS
W C=C
A reprint of the recent article, "NAFTOLEN MV in GR-S Tires," is available upon request.
OTHER TYPES OF NAFTOLEN: R-100, LV, and HV

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CHEMICAL CORPORATION

10 EAST 40TH STREET • NEW YORK 16, N. Y.

CHECK THESE 2 PERFORMANCE PROVED CEMENTS AGAINST YOUR NEEDS!

N-100 SELF-CURING ADHESIVE *

for cementing together or one to another raw fabrics, coated fabrics, molded parts, leather, wood, paper, tubing, sponge, channel-stock, stripping and sheet material... *as a Sealant* for rubber and synthetic valve seats, gaskets, etc.

A Two-Part Neoprene Base Formula of Brush Viscosity and Neutral in Color

...Extremely high green strength... Good strength after standing 3 to 4 hours... Optimum cure reached in 10 days at 68-70°F (in 16 hours at 100-125°F; in 1 hour at 255-260°F) ... Excellent water, oil, flame and delamination resistance... Chemical resistance to acetic acid, alcohols, aliphatic hydrocarbons, ammonia, calcium chloride, copper sulphate, fatty acids, hydrochloric acid, oxalic acid, phenol, sodium hydroxide, sulfuric acid... Extremely high shear strength... Contains no Benzol.

N-800 NEOPRENE PUTTY *

for Filling rubber, neoprene and other synthetic rubber parts . . . *for Repairing* wire cable . . . *as a Binder . . . and for Caulking.*

A Two-Part Neoprene Base Formula of Putty Consistency and Black in Color

. . . Bonds without Primers . . . Optimum cure reached in 10 days at 68-70°F (in 16 hours at 100-125°F; in 1 hour at 255-260°F)... High dielectric strength... Excellent water, oil and flame resistance... Chemical resistance to acetic acid, alcohols, aliphatic hydrocarbons, ammonia, calcium chloride, copper sulphate, fatty acids, hydrochloric acid, oxalic acid, phenol, sodium hydroxide, sulfuric acid.

* Both of these formulas have been performance-proved in important war production work over a period of several years.

Address all inquires to the Union Bay State Chemical Company, Rubber Chemicals Division, 50 Harvard St., Cambridge 42, Massachusetts.

UBS

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COATING COMPOUNDS · IMPREGNATING MATERIALS · COMBINING CEMENTS

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"THE LABORATORY GROUP" will tell you why the Royle #½ and the Royle #1 are the extruding machines you will want to know more about when you plan for the busy years ahead. Through evolutionary development features have been incorporated in these machines which will secure successful results with the growing number of extrudable compounds.

Whether you have plans for research or light product extruding "THE LABORATORY GROUP" will give you basic data you will need . . . If you plan a program of research you will find that the Royle #½ and Royle #1 have the same characteristics found in the larger Royle extruding machines. . . . If you plan to go into light product extruding you will find it more efficient and more profitable to extrude with a Royle designed for light extrusion processes.

Send for your copy of "THE LABORATORY GROUP" and let it suggest to you how Royle extruding machines can meet your specific requirements.

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Technical Bulletin No. 16 — on the Compounding of GR-S with Substantial Loadings of Zinc Oxide

GR-S-10 (Rosin Soap Polymer) with 100 Parts of Zinc Oxide

"El Sixty" Acceleration

(Refer to Technical Bulletins Nos. 9, 10, 11, 13, and 14)

GR-S-10 reinforced with 100 parts of Kadox-15 Zinc Oxide continues to show good performance with varied acceleration. Zinc Oxide with "El Sixty" develops excellent stress-strain properties, with moderately low set; the tear resistance is measurably higher than with regular GR-S. GR-S-10 generally gives lower room temperature rebound values than GR-S, but the heat generation, as determined by the Flexometer, is in a satisfactory range. The cut-growth resistance is good.

Compound No. 16

GR-S-10	100.0
Sulfur	3.0
"El Sixty"	2.0
Coumarone-indene Resin	3.0
E.L.C. Magnesia	5.0
Zinc Oxide	100.0

ORIGINAL RESULTS

Time of Cure Min. at 45 Lb.	Tensile Strength (psi)	Per Cent Elongation	Modulus Load (psi) for Elongation of:				Permanent Set	Shore Hardness	Tear Resistance Tested at:	
			200%	300%	400%	500%			Room Temp.	100°C.
15	745	1165	75	110	150	185	.43	30	104	30
30	1690	985	115	190	270	385	.34	37	105	50
45	1850	845	155	270	385	500	.28	40	87	60
60	1870	775	185	300	410	600	.26	42	80	47
90	1820	740	235	350	465	660	.19	44	87	39
120	1810	735	230	345	460	690	.16	44	90	41

Time of Cure Min. at 45 Lb.	Goodyear-Healey Pendulum		Compression Fatigue (Goodrich Flexometer)*					Cut-Growth Resistance Inches—Failure at	
	Indentation in mm.	Per Cent Rebound	Per Cent Initial Comp.	Running Time and Per Cent Permanent Set	Max. Temp. Rise °C.	Dynamic Compression Initial	Dynamic Compression Final	2,000 Cyc.	11,000 Cyc.
120	8.19	55.1	27.6	15'—3.3	22.6	18.1	19.5	.05	.35

*Test Conditions: 100 Lb. Load.. 0.15" Stroke. 100°C. Oven Temp.

Uniform Quality HORSE HEAD ZINC OXIDES

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160 FRONT STREET • NEW YORK 7, N.Y.
Products Distributed by THE NEW JERSEY ZINC SALES COMPANY
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Good news for rubber manufacturers—

CHEMIGUM N-3

the easy-processing synthetic rubber

IS NOW AVAILABLE

non-staining and non-discoloring

THIS new type of Chemigum N-3 makes Goodyear Chemigum more desirable than ever for many uses—opens new fields to its employment. Chemigum N-3 is more easily processed than other synthetics. It breaks down more uniformly — is heat stable — doesn't harden when mixed at high temperatures.

It also has good heat-aging characteristics, low solvent swell, low compression set and high oil-resistance. As a result many processing difficulties are eliminated by using Chemigum N-3, production time is saved and you get uniform quality in your finished products.

Chemigum N-3 can now be supplied in any quantity for volume production. Write for sample and processing data, specifying which type you want. Goodyear, Chemical Products Division, Plastics and Coatings Dept., Akron 16, Ohio.

Chemigum (pronounced Kem-e-gum)—T.M. The Goodyear T. & R. Co.

GOODYEAR

THE GREATEST NAME IN RUBBER

Announcement

TO THE

AUTOMOBILE INDUSTRY

WE ARE READY

with a complete line of synthetic rubber latex adhesives, coatings and saturants, compounded to meet your specific requirements.

General Latex & Chemical Corp.

666 MAIN STREET • CAMBRIDGE, MASS.

Vultex Division—Verdun Industrial Buildings
River Street, Verdun, Montreal, Quebec

Agents for Rubber Reserve Company for storage and distribution of natural rubber latex. Distributors for Rubber Reserve Company for synthetic latex. Operators of the Government-owned Baytown, Texas, synthetic rubber plant in collaboration with the General Tire & Rubber Co.

AN OLD-FASHIONED PORTRAIT COMES TO LIFE

It has been a memory — a happy memory to millions of motorists. It was a beauty as they remembered it, worthy of admiration for its handsome appearance and fine, serviceable life. . . A cherished picture, yes; but it is coming back to reality. With the release of butyl rubber soon and the availability NOW of SILENE EF a *better* inner tube will be the order of the day. SILENE EF makes that *better* tube possible. It assures success in color compounding for *red* tubes. . . SILENE EF is essential in non-black butyl tube compounds to give them the processing qualities, and the good cured physical properties unobtainable when clays or whitings are used alone as the principal loading pigment.

SILENE EF

STANDARD Chemical Company
General Offices: AKRON 8, OHIO

New England: 335 Chamber of Commerce Bldg., Boston, Mass.
Mid-West: 2724 W. Lawrence Ave., Chicago, Ill.

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SERVICE
TO THE
RUBBER INDUSTRY
THAT HAS NOT
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1868

As specialists in SCRAP RUBBER we have served the reclaiming industry since its inception, our long experience and expert attention insuring scrap that always comes up to specifications.

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JACK SIDER, *President* J. K. McELLIGOTT, *Exec. Vice-Pres.*

We Solicit Your Inquiries

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CHICAGO 1, ILL.

159 CLEWELL STREET
AKRON 5, OHIO

Cable Address: "Gyblowell"

Check these 5 new outstanding characteristics of ACRAWAX C

1. anti-block
2. anti-tack
3. speeds up production by eliminating "stick" on the mill or calender
4. mold and die lubricant
5. moisture and solvent resistance

Small percentages of high melting point (280°F.) ACRAWAX C incorporated into plastics and elastomers are producing excellent results.

TYPICAL SUCCESSFUL APPLICATIONS:

Unsupported films or sheets — vinyls, Neoprene, GR-S, for anti-block and anti-tack.

Coatings—vinyls, polyvinyl butyrals, nitrocellulose, for anti-block and anti-tack.

Molded articles—synthetic elastomers, thermoplastic and thermosetting resins, for mold release.

Hot melts—of many types and for many purposes, as those used for coatings, impregnations, sealants, potting compounds, etc., have benefited greatly from the desirable characteristics of ACRAWAX C.

IN ADDITION to solid and granule form ACRAWAX C is available as

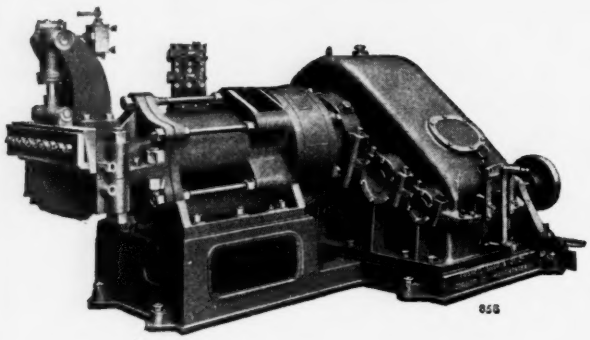
1. Powdered – approximately 100 mesh
2. Atomized – approximately 3 microns

In these finely divided forms, greater ease of processing and incorporation into the blend is obtained.

For further information on ACRAWAX C write to Dept. I.R.W.

GLYCO PRODUCTS CO., INC.
26 COURT STREET, BROOKLYN 2, NEW YORK

SHAW RUBBER EXTRUDERS

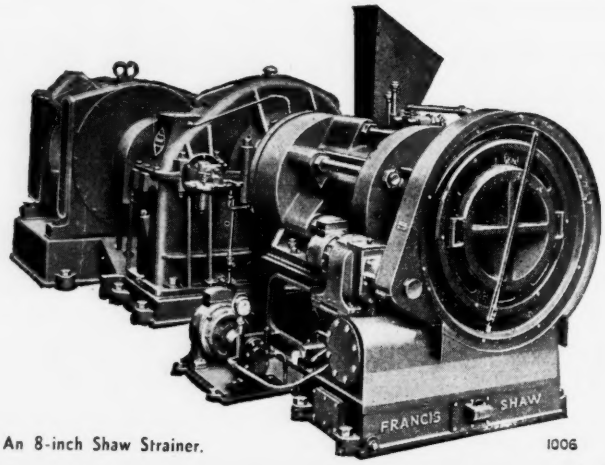


An 8-inch Shaw Extruder for Tyre Tread Production.

We have been making all types of extruders for the rubber industry since 1879

Your enquiries will receive the benefit of over 65 years experience in the design and manufacture of sound machines.

WE CAN EQUIP COMPLETE TYRE PLANTS AND GENERAL RUBBER PROCESSING FACTORIES WITH MACHINERY PRODUCED ON MODERN PLANT BY SKILLED WORKMEN AND TECHNICIANS.



An 8-inch Shaw Strainer. 1006

FRANCIS SHAW & CO. LTD. MANCHESTER 11 ENGLAND

R.133

KOSMOS DIXIE

UNITED CARBON COMPANY, INC.

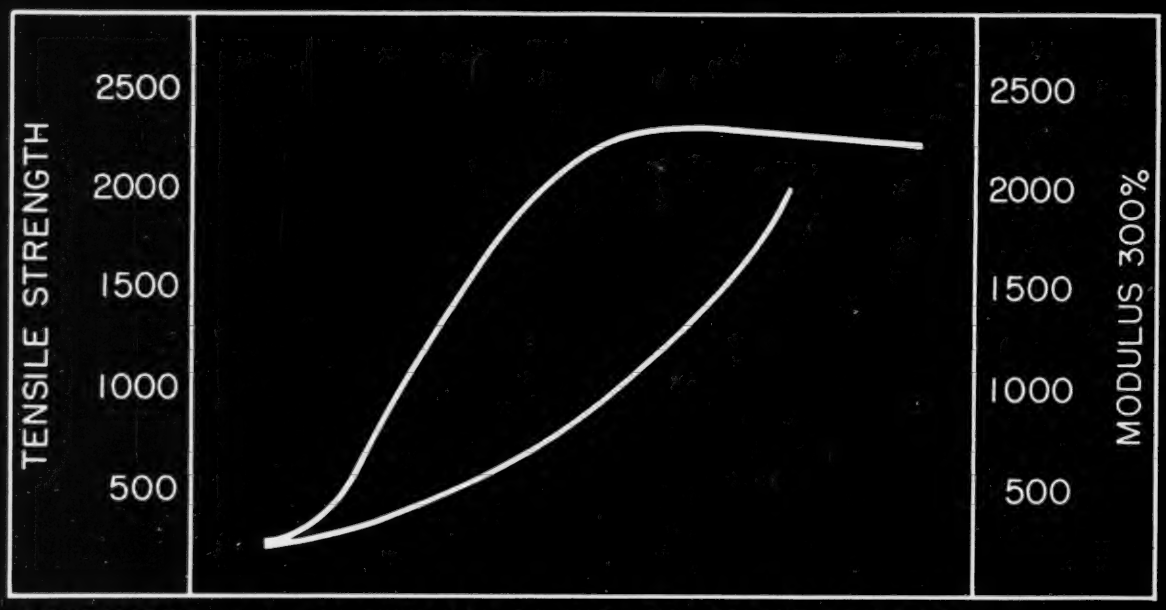
CHARLESTON 27, W. VA.

NEW YORK • AKRON • CHICAGO

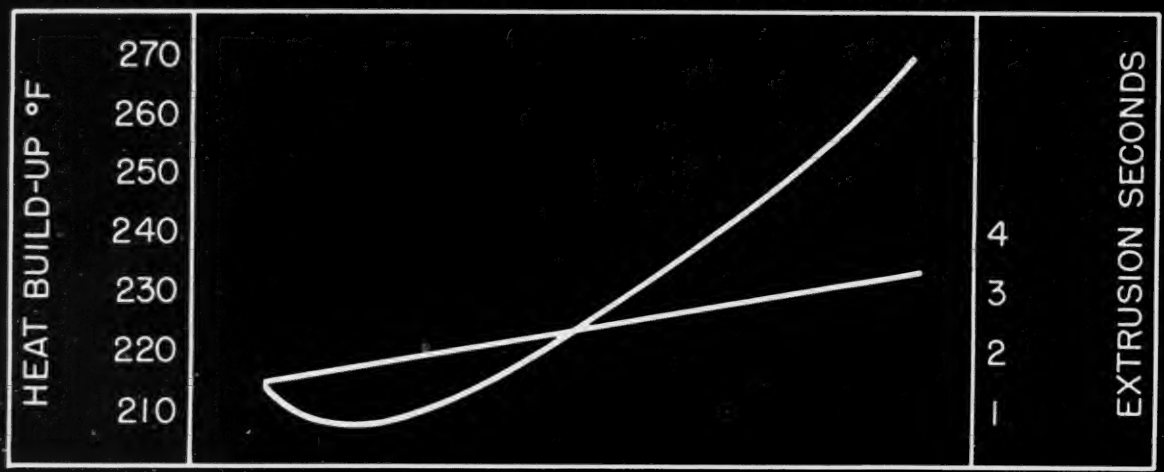
KOSMOS 40 · DIXIE 40

HMF TYPE

HIGH MODULUS FURNACE DUSTLESS BLACK



LOADINGS 0 10 20 30 40 50 60 70 80 90 100



RESEARCH DIVISION

UNITED CARBON COMPANY, INC.

CHARLESTON 27, W. VA.

This month we're telling 39,477,228 people about RAYON CORD TIRES!

A new chapter in the history of tires

Out of the laboratory test tube, through the fury of war, RAYON CORD takes its place at the head of the list of revolutionary advances in tire-making.

* * *

Rayon tires kept our Armies rolling on to Victory—saved many a G.I.'s life on the far-flung battlefields of the world. Soon you'll be rolling on rayon too—and what an experience you have in store. Tire makers say that never will you have ridden so safely, never so comfortably, never will you have enjoyed so much trouble-free mileage.

From Fashions to Fighting—Maybe you know how rayon, long in the forefront of the fashion picture, went to war. Exhaustive tests and wartime performance definitely proved rayon superior, whether used with synthetic rubber, natural rubber, or combinations of both.

Why Rayon Cord Tires are Better—Because rayon production is entirely within human control, and is not subject to fickle Nature, it can be given properties of strength and uniformity only possible through scientific production. Here are some of the advantages you can look forward to in tires of rayon:

GREATER SAFETY—Heat is the enemy of tires. Because rayon cord tires run cooler, and the cord actually gets stronger as their temperature rises, road failure is greatly reduced. Reports from the Army and bus and truck fleet operators show there are fewer blowouts and road failures when they use rayon cord tires.

MORE COMFORT—Because rayon cord has greater strength per unit of weight, tires of rayon can be lighter, requiring less rubber and cord. And tire men will tell you a lighter tire flexes easier, has less rolling resistance, and altogether, gives you a more comfortable ride.

LONGER LIFE—With heat breakdown reduced, rayon cord tires will give you greater mileage. How much greater depends on car, driver, roads but, truth be told, you'll probably be riding on the same set of rayon cord tires as long as you keep your car.

Industrial Rayon's TYRON—A leader in the manufacture of rayon for tires, Industrial Rayon is proud of its major contributions to this important development. Our Tyron, a rayon cord of war-tested excellence, is produced by an exclusive Continuous Process to provide the ultimate in uniformity. To tire manufacturers this is an ideal—a cord that is uniform today, tomorrow, next year—spool after spool, and hence tire after tire.

Industrial
RAYON CORPORATION
Cleveland, Ohio
makers of *TYRON and Sure-O rayon

SMASHING full-page messages are running in the

Saturday Evening Post — Colliers
Look — Liberty — American Weekly
American Magazine — Fortune

and in large space ads in more than 100 newspapers in major cities from coast to coast, to tell the story of this modern miracle, the rayon cord tire.

As producers of Tyron rayon tire cord, Industrial Rayon is proud to have played so important a part in the development of high-strength rayon—and pleased to tell Americans about these new, safer, better, longer-wearing tires of their motoring future.

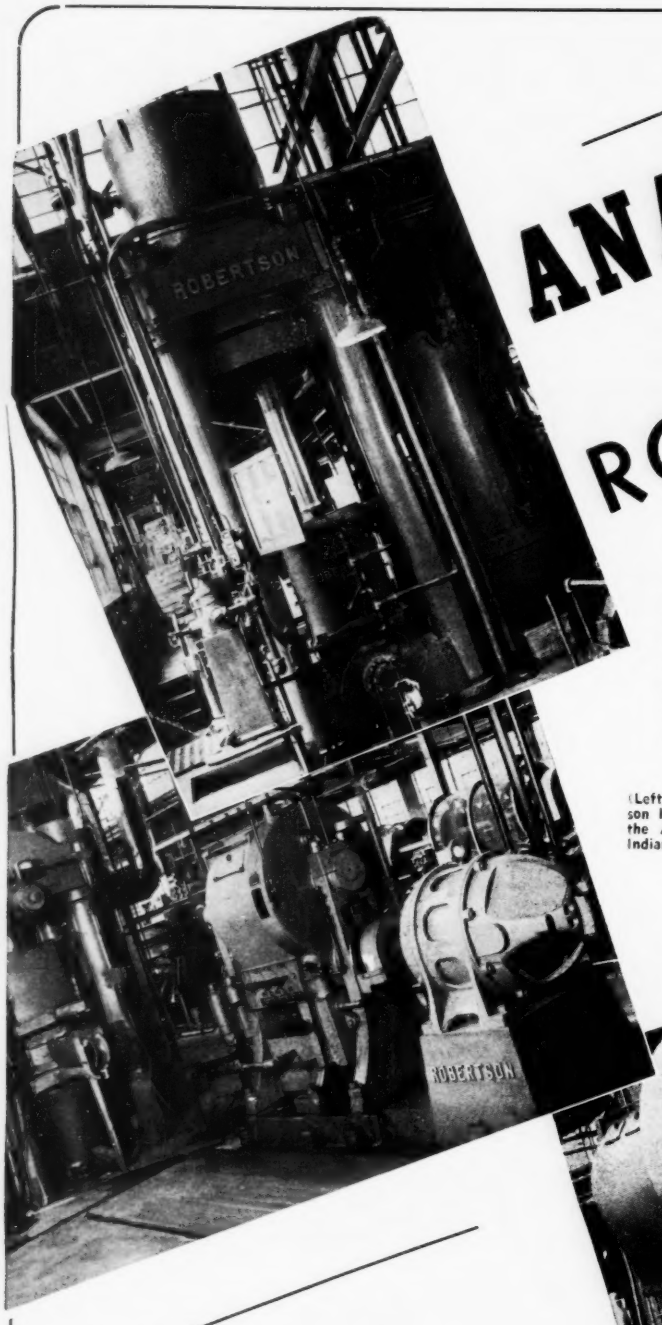
***TYRON rayon for tires**

*Reg. U. S. Pat. Off.

Made by INDUSTRIAL RAYON CORPORATION
Cleveland, Ohio

ANACONDA *chooses* ROBERTSON

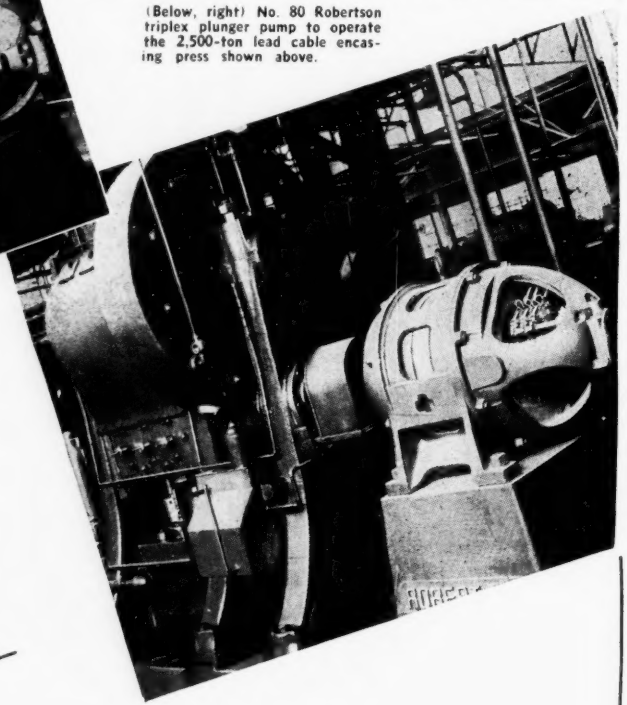
As a man is judged by the company he keeps, so a manufacturing concern is judged by the type of business it attracts and the organizations it serves. It is a significant fact that the majority of the leaders in the field of lead encased wire and cable use Robertson equipment. The Anaconda Wire and Cable Co. has been among these leaders we have been privileged to serve, again and again. The pictures on this page show a few Anaconda installations of Robertson-engineered equipment.



(Left, above) 2,500-ton Robertson lead cable encasing press at the Anaconda plant in Marion, Indiana.

(Left, center) 1,000-ton Robertson lead cable encasing press equipped with Robertson No. 50 triplex plunger hydraulic pump.

(Below, right) No. 80 Robertson triplex plunger pump to operate the 2,500-ton lead cable encasing press shown above.



JOHN Robertson COMPANY INCORPORATED

125-135 WATER STREET, BROOKLYN 1, NEW YORK

Designers and Builders of all Types of Lead Encasing Machinery

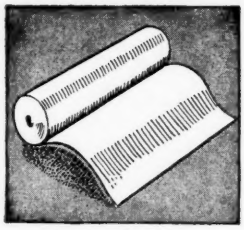
Since 1858

DIOCTYL SEBACATE

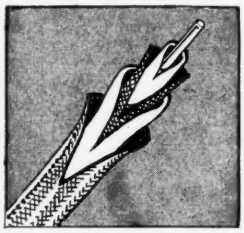
A NEW ESTER TYPE PLASTICIZER

provides

Efficiency, Permanence and Outstanding Flexibility at Low Temperatures In Polyvinyl Chloride Compounds



Paper Coating

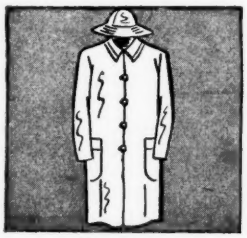


Wire and Cable Insulation

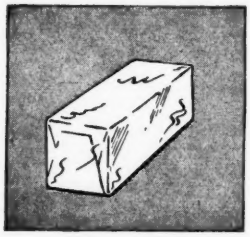
This new ester type plasticizer possesses a unique combination of properties which make it especially efficient in many applications of polyvinyl chloride compounds and their copolymers. Among these properties are excellent low temperature flexibility, good draping characteristics, good resistance to volatilization and extraction by water, and stability at elevated temperatures.

Coated fabrics that must withstand conditions of extreme temperatures; others which must resist water; strip coatings, free films, and wire and cable insulation...all gain advantage in manufacture—and performance—when Dioctyl Sebacate is used.

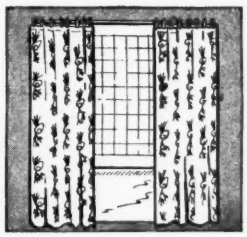
Our technical staff will aid you in the application of Dioctyl Sebacate to your special processes.



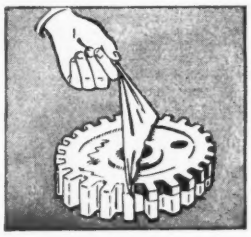
Rainwear



Film and Foil



Shower Curtains

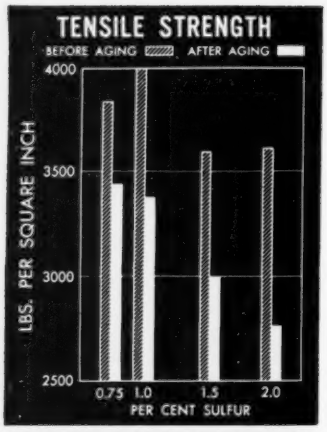


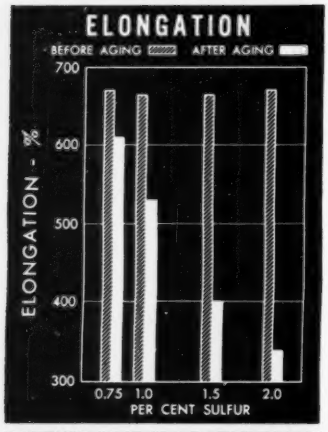
Strip Coatings

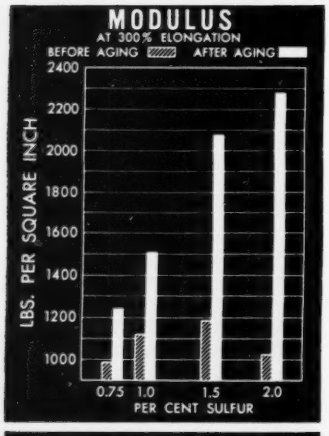
THE RUBBER CHEMICALS DEPARTMENT

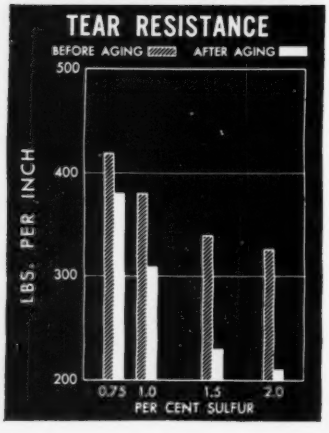
THE RESINOUS PRODUCTS & CHEMICAL COMPANY

WASHINGTON SQUARE, PHILADELPHIA 5, PA.









Give your GR-S Compounds heat stability provided by low sulfur content

Safe, fast curing now made possible by FBS LITHARGE

As you know, reduction in sulfur content means increase in heat stability.

It has now been demonstrated that FBS litharge (plus benzothiazyl disulfide) makes low sulfur formulas practicable.

Why?

Because it speeds up greatly the rate of cure without increasing the risk of scorching.

Thus, even though the normal quantity of accelerator is used, *the sulfur content can be reduced.*

Note, in the series of tests charted and tabulated, the superior behavior of the 0.75 and 1.0 sulfur formulas.

FORMULA

GR-S (Institute)	100
E.P.C. Carbon Black	50
Zinc Oxide	3
Coal tar softener	5
Benzothiazyl Disulfide	1.0
FBS Litharge	1.5
Sulfur	variable

Effect of Varying Amounts of Sulfur on Physical Properties

(Curing period: 20 min. Temp: 287° F.)

% Sulfur	Tensile Strength	% Elongation	Modulus at 300% Elong.	Tear Resistance
0.75	3840	670	980	420
1.0	4000	665	1120	380
1.5	3600	665	1190	340
2.0	3620	670	1025	325
After Aging 24 Hours at 100° C.				
0.75	3460	610	1240	380
1.0	3380	530	1510	310
1.5	3000	400	2080	230
2.0	2770	340	2280	210

CONCLUSIONS:

1. FBS Litharge-thiazole with low sulfur imparts heat stability.
2. Modulus is high and steady.
3. Elongation is retained despite exposure to heat.
4. Heat stability prevents brittleness and improves tear resistance.
5. Rate of cure is relatively fast, without tendency to scorch.
6. The combination is inexpensive and efficient.

Ask us to send you a printed report, "Compounding of GR-S for Heat Resistance," issued by the Rubber Division of our Research Laboratories, which covers the subject of FBS Litharge for low sulfur formulae in greater detail and from a number of additional angles.

NATIONAL LEAD COMPANY New York, Buffalo, Chicago, Cincinnati, Cleveland, St. Louis, San Francisco: Boston (National-Boston Lead Co.); Pittsburgh (National Lead & Oil Co. of Penna.); Philadelphia (John T. Lewis & Bros. Co.).

NOW AVAILABLE:

SYNTRON "SIX-IN-ONE" coating for baby pants

SYNTRON "SIX-IN-ONE" is a special, custom-made coating developed by the Gordon-Lacey research laboratories for solving the problems of fabric coaters . . . coaters of baby pant, crib sheet, high-chair and play-pen pad and similar fabrics.

SYNTRON "SIX-IN-ONE" is the one coating that has these six outstanding qualities:

❶ it is 100% WATERPROOF; ❷ it is BOILPROOF . . . completely withstands boiling water without blistering; ❸ it is SOFT and FLEXIBLE; ❹ it is RESISTANT to ACIDS and ALKALIS; ❺ it is ABRASION-RESISTANT . . . will not scuff or peel; and ❻ it is RESISTANT to OILS and GREASES.

SYNTRON "SIX-IN-ONE" is a typical example of how Gordon-Lacey develops custom-made coatings to fit your individual needs . . . coatings that are exactly right for your individual product.

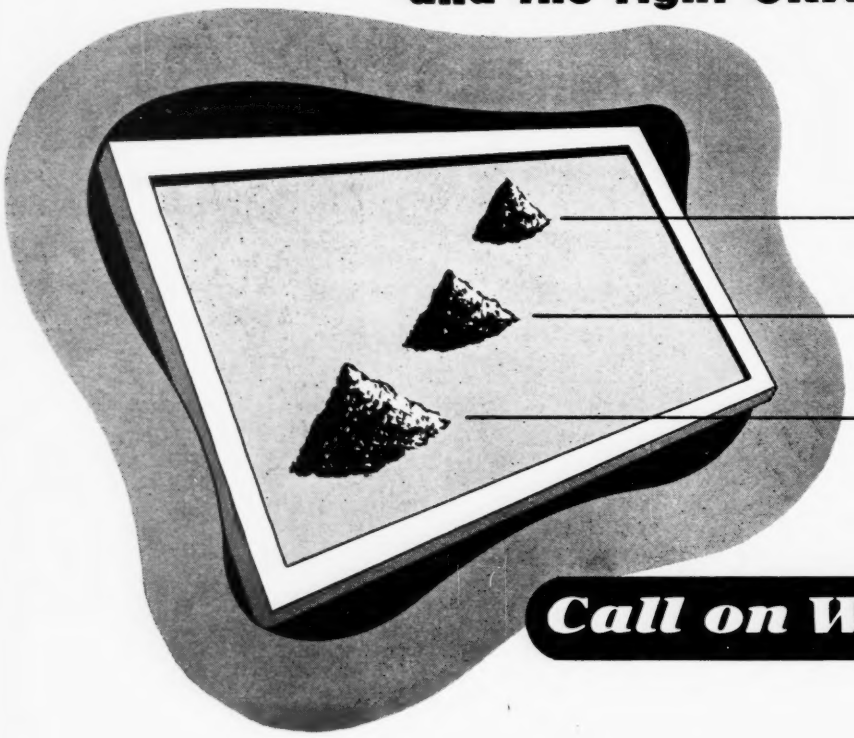
SYNTRON* Coatings for PAPER CLOTH METAL

New and better SYNTRON *custom-made* coatings can also be developed for coating cotton, rayon, nylon, fiberglass or any other fabric surface. Gordon-Lacey research laboratories are ready to solve your coating problem whether you're servicing the RAINWEAR, SHOE, HOUSE FURNISHINGS, CLOSET ACCESSORIES, BATHROOM SHOWER CURTAINS, SPORTSWEAR, TOYS, or any other trade. Send us the story of your coating problem.

GORDON-LACEY
Chemical Products Co.
57-02 48th ST. • MASPETH, N. Y.

For the right KIND

and the right GRADE



Call on Whittaker

WHITTAKER invites the challenge of your most exacting requirements—not only as to *kinds* of minerals, colors and pigments, but also as to *grades.* Density, color fineness and chemical properties vary widely in many materials, from grade to grade. WHITTAKER'S stocks of *all* grades are unusually complete. WHITTAKER grinding, research and laboratory facilities are equipped to *match* the characteristics of ingredient and process materials you have used in the past, or to suggest grades still better suited to your specific needs. For the right grade—and the broadest choice of grades—make it a policy to "call on WHITTAKER". Users of minerals, colors and pigments in every field have been doing it for over fifty years. All WHITTAKER products, of course, are laboratory-controlled for density, quality, color.

A Few of the GRADES of a few WHITTAKER PRODUCTS

TALC—all grades; imported and domestic

STEARATES—high and low gel, aluminum, calcium, magnesium, zinc

MAGNESIUM CARBONATE—heavy and light, U.S.P. and Tech.

PUMICE STONE—powdered, granular, lump; American

CALCINED MAGNESIUM—extra light, medium, heavy

WHITING—chalk and limestone

MAGNESIUM OXIDE—heavy and light, U.S.P. and Tech.

286

WHITTAKER EST. 1890

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260 West Broadway, New York 13, N. Y. • Plant: South Kearny, New Jersey

SALES REPRESENTATIVES

CHICAGO — Harry Holland & Sons
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NEW ORLEANS — Edward W. Ortenback
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uniformity makes the big difference

IT HAS TO BE UNIFORM BEFORE RUBBER CAN TOUCH IT

Guided by close laboratory control, MT. VERNON fabrics are inspected and checked through every step of manufacture to produce the more uniform weave that means uniform qualities of absorption, strength, toughness, resiliency, and flexibility—known qualities you can depend on consistently when you specify the top-grade cotton quality of MT. VERNON fabrics.

MT. VERNON-WOODBERRY MILLS

TURNER HALSEY
COMPANY
Selling Agents
40 WORTH ST. • NEW YORK

Branch Offices: CHICAGO • NEW ORLEANS • ATLANTA • BALTIMORE • BOSTON • LOS ANGELES • SAN FRANCISCO

Now Available....

GOODRITE ERIE

an outstanding accelerator for low heat build-up
in compounding GR-S and natural rubber

GOODRITE VULTROL

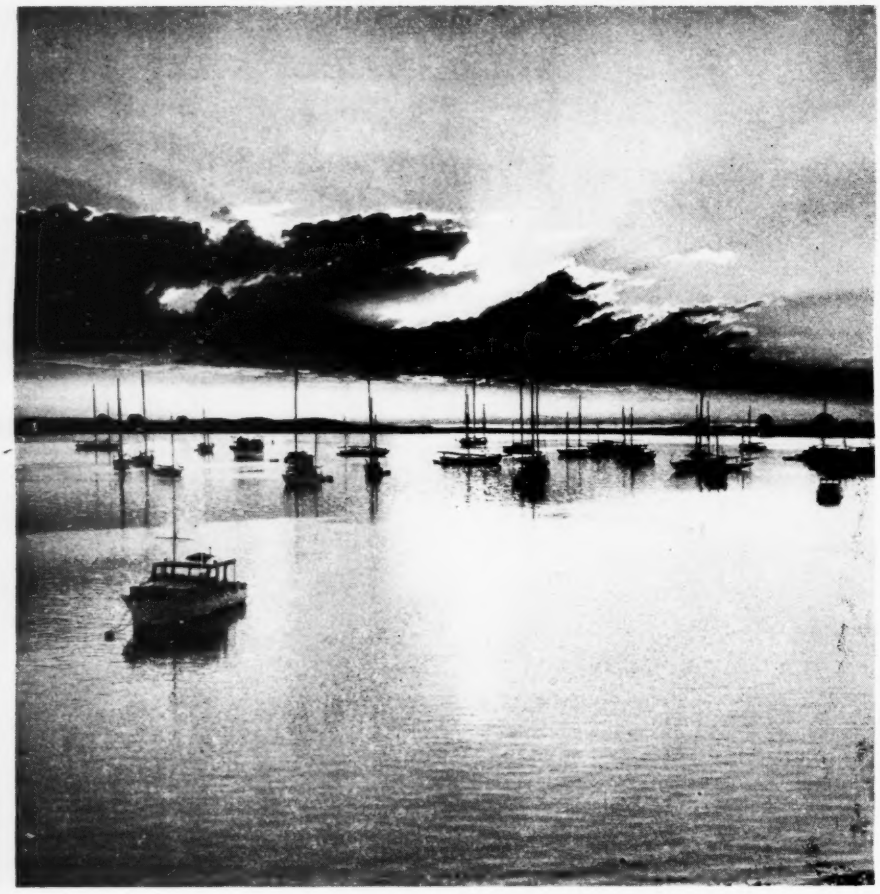
for use in synthetic rubber compounding to prevent scorching, and for recovering scorched stocks

For technical data please write

B. F. Goodrich Chemical Company

A DIVISION OF THE B. F GOODRICH COMPANY

ROSE BUILDING CLEVELAND 15, OHIO



Safe Anchorage

There's a comforting feeling of security in the assurance that when you specify PELLETEX or GASTEX you know you will always get a pure, uniform, and dependable product — exactly what you order to be delivered when you want it. It's like dropping anchor in a quiet harbor after a battle with a stormy sea outside.

GENERAL ATLAS CARBON CO.

PELLETEX

GASTEX

MANUFACTURER

Pampa, Texas

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HERRON BROS. and MEYER

DISTRIBUTOR

New York, N. Y.

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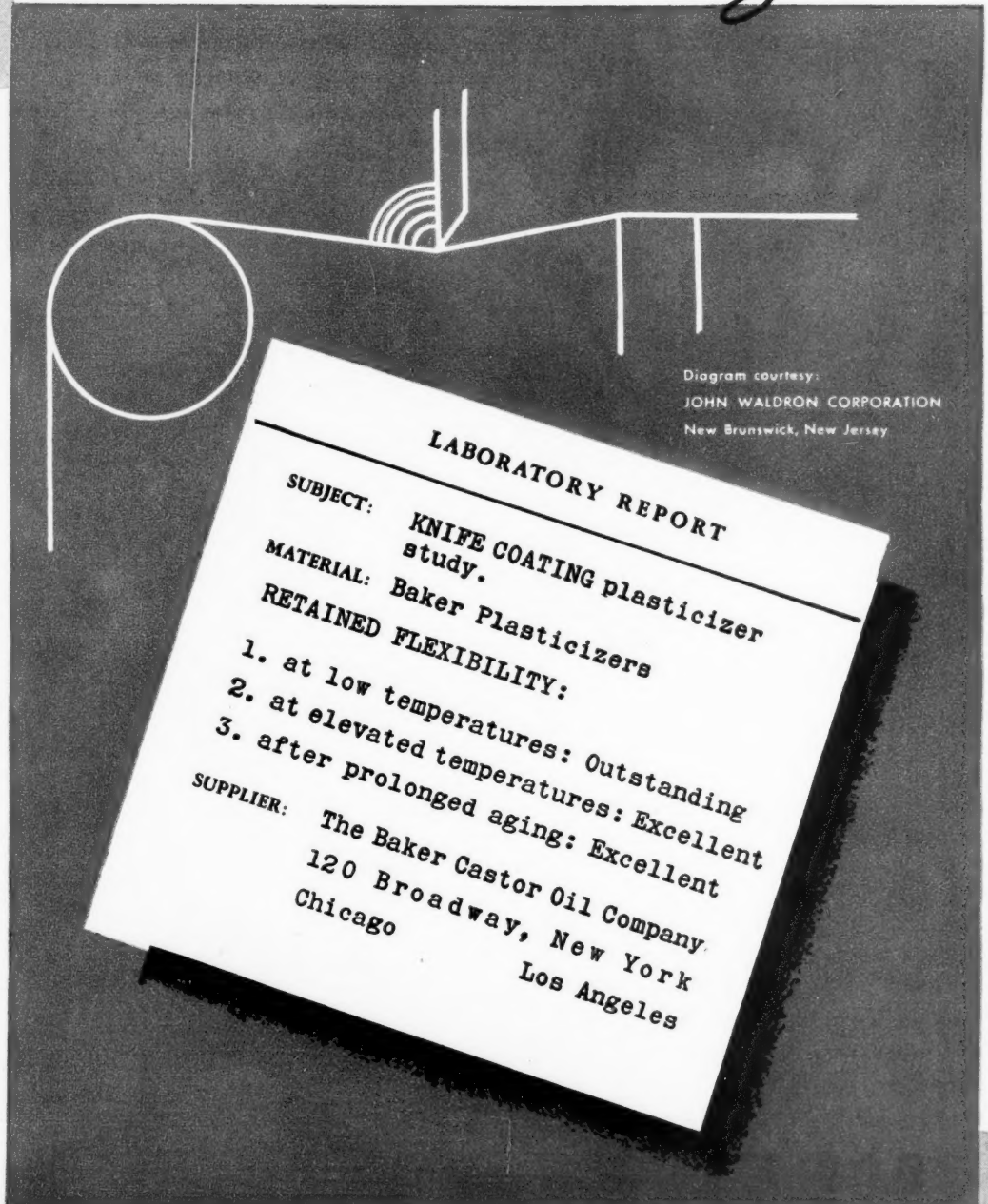
RUBBER H AND M PIGMENTS Chemicals

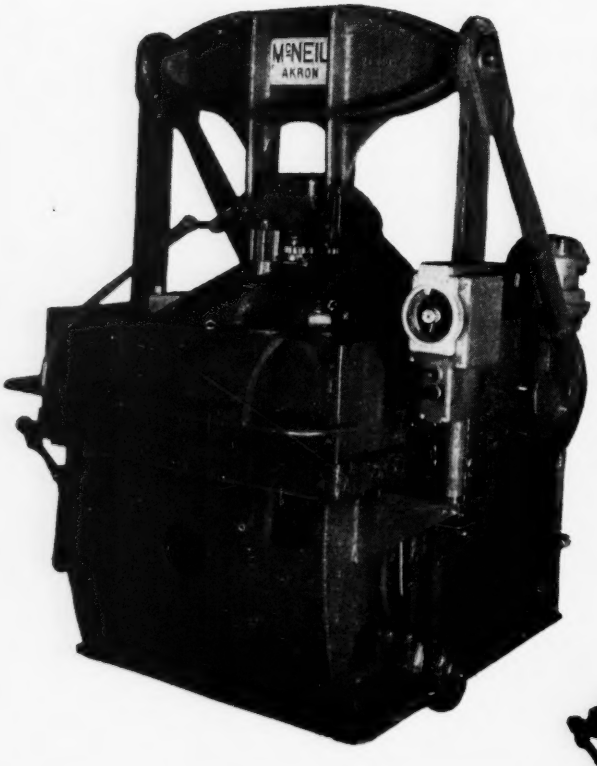
BAKER *Plasticizers*



BAKER *Plasticizers*

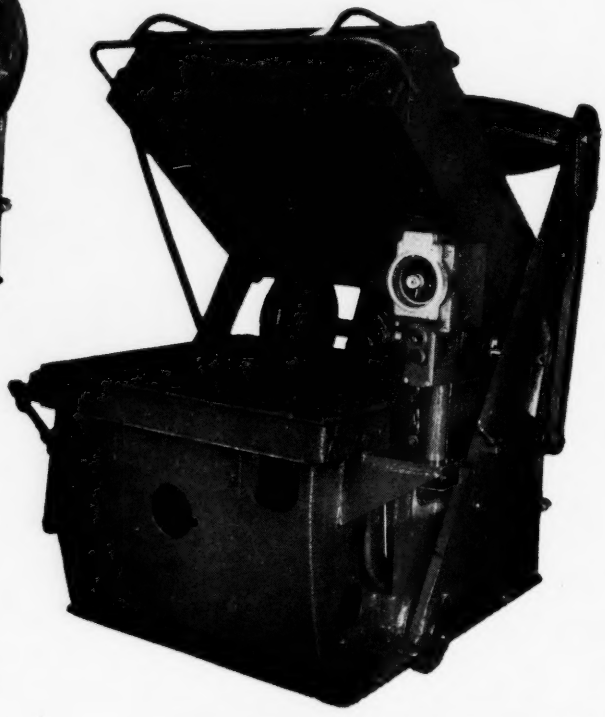
The McNEIL PLATEN PRESS

for sponge or blown goods!



Another addition to the McNEIL line of outstanding curing equipment is this 40″ x 40″ electrically operated press, complete with steam platens.

Designed for the curing of zero pressure wheel toy tires, up to nine at a cure, it can also be used for other types of blown goods or sponge rubber articles.



The press into which we have fitted 40″ x 40″ platens and insulating shields is our standard 45″ tube press with minor revisions.

We quote this job complete with Hi-Torque motor, McNEIL design automatic timer, electric safety bar, and other necessary electrical equipment as well as complete piping. Under full load adjustment, the unit is good for 110,000 lbs. pressure.

MANUFACTURING AGENTS
GREAT BRITAIN—
Francis Shaw & Co., Ltd., Manchester, England.
AUSTRALIA and NEW ZEALAND—
Chas. Ruwolt Proprietary, Ltd., Victoria, Australia.

The McNEIL MACHINE & ENGINEERING CO.

96 EAST CROSIER ST., AKRON 11, OHIO

Rubber Working Machinery • Individual Curing Equipment for Tires, Tubes and Mechanical Goods

FUZON-O

The New Waterproof Coating with "VINYLITE" Resin base*

CUTS TIME, LABOR & MATERIALS IN HALF

FUZON-O resists oil, grease, alkali and acid . . . withstands oxidation . . . is exceptionally immune to moisture, abrasion and temperature variation. Use FUZON-O on cotton, nylon, glass fabrics . . . and many other materials. Learn more about FUZON-O. Write for booklet to the Stanley Chemical Company . . . manufacturers of Stanley Lacquers, Enamels, Synthetics and Japans . . . East Berlin, Connecticut.

*Trade Mark Carbide and Carbon Chemicals Corporation

Stanley Chemical

FROM THE CATALOG OF BARRETT

RUBBER COMPOUNDING MATERIALS...

B.R.V.*

B.R.V. is the highest boiling of any of the liquid softeners produced by Barrett from coal-tar oil for the rubber industry.

Specific Gravity	1.14 to 1.18 at 25°C/25°C
Specific Viscosity, Engler, 50 ml. at 50°C	5.0 to 10.0
Insoluble in Benzene, % by weight	0.5 maximum
Water, % by volume	0.5 maximum
Distillation, % by weight	
To 300°C	7.0 maximum
To 315°C	3.0 to 12.0
To 355°C	28.0 maximum

B.R.V. is particularly recommended for use in

GR-S — Reclaiming

GR-A

Availability

Tank cars and 50-55 gallon non-returnable steel barrels

*Reg. U. S. Pat. Off.

THE BARRETT DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 Rector Street, New York 6, N. Y.

In Canada: The Barrett Company, Ltd.
5551 St. Hubert Street, Montreal, Que.

Barrett

For Every RUBBER PROCESSING requirement

UNITED ROLLS

United 24"x60" Cracker Roll with saw tooth corrugations.

- all types
- all sizes
- for washers
- crackers
- refiners
- mills
- calenders

Making rolls for the rubber processing industry has been a growing, highly specialized division of our business for 30 years.

By research and progressive development in roll design and manufacture, we have made important contributions to the production of modern, more highly efficient processing machinery to supply the ever increasing demand for natural and synthetic rubber. Here and in foreign countries, UNITED ROLLS are accepted by manufacturers as the best to be had at any price.

Why not consult us on your next roll requirement. Our engineers specialize in designing rolls for new or unusual processes as well as for standard applications. The production facilities of six great plants are at your service.

UE&FCO REG. T.M.

UNITED ENGINEERING AND FOUNDRY COMPANY

Pittsburgh, Pennsylvania

PLANTS AT PITTSBURGH · VANDERGRIFT · NEW CASTLE · YOUNGSTOWN · CANTON
SUBSIDIARY: ADAMSON UNITED COMPANY, AKRON, OHIO
AFFILIATES: DAVY AND UNITED ENGINEERING COMPANY, LTD., SHEFFIELD, ENGLAND
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★ *The World's Largest Designers and Makers of Rolls and Rolling Mill Equipment*

GREATER SAFETY

ARMY proving ground tests drove home the fact that rayon cord tires were ideally suited to wartime duties.

Heat of sustained operation, cutting, bruising are among the chief causes of dangerous tire failures . . . greatest enemies of safety. And though the Army tests may not apply to your exact operating conditions, they indicate that rayon cord tires will increase tire safety for you.

Rayon has superior tensile strength. Like spring steel it can withstand an almost infinite amount of flexing. It remains strong in spite of tire heat. And the thinner sidewalls that rayon makes possible reduce friction heat at high running speeds. In tires of equal thickness rayon runs cooler by as much as 10°F.

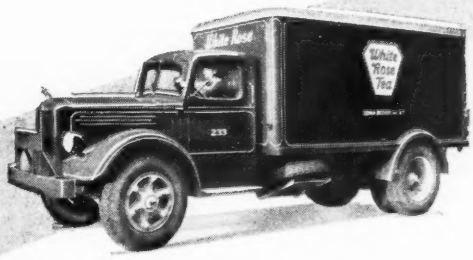
Greater safety follows from fewer blowouts, bruises, cuts, abrasions, and sidewall breaks. Additional advantages of rayon cord tires are longer life, lower operating costs, fewer delays, better mileage, and higher profits for you.

Source of data: Hearings before a Special Committee Investigating the National Defense Program, United States Senate—Seventy-eighth Congress, First and Second Sessions.

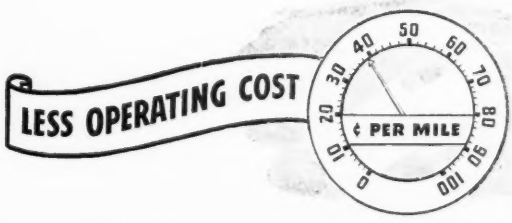
with Rayon Cord

"RAYON CORD TIRES GIVE MORE STOP-START MILEAGE"... *Seeman Bros., Inc.*

George L. Varjan, superintendent of this large private fleet, reports: "Rayon cord tires give us about 10% more mileage on stop-start operations, and about 25% more on over-the-road hauls. The carcass takes more recaps, and will run at higher speeds and loads without sacrificing safety. Our blowout record is also better with rayon."



Less friction heat, higher tensile strength and greater uniformity of rayon tire cords mean more safety at high running speeds.



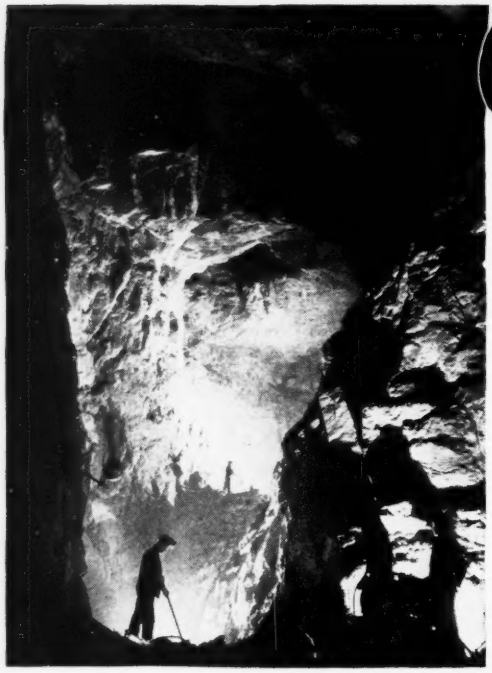
Rayon cord tires give longer life, greater mileage . . . reduce impact failures, road delays, tire renewals.

AMERICAN VISCOSE CORPORATION

America's largest producer of rayon tire cord, yarn and staple fiber

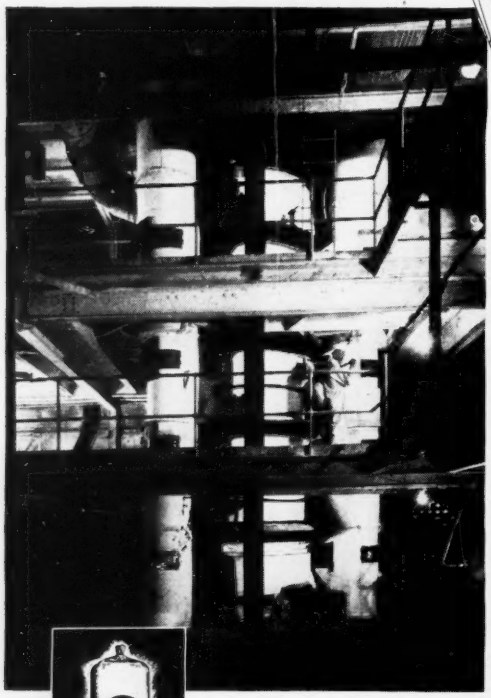
Offices: 350 Fifth Avenue, New York 1, N. Y.; Charlotte, N. C.; Philadelphia, Pa.; Providence, R. I.; Washington, D. C.; Wilmington, Del.

ST. JOE *Lead-Free* ZINC OXIDE



ABOVE: *A stope in the Balmat mine.*

BELOW: *Partial view of electro-thermic furnace.*



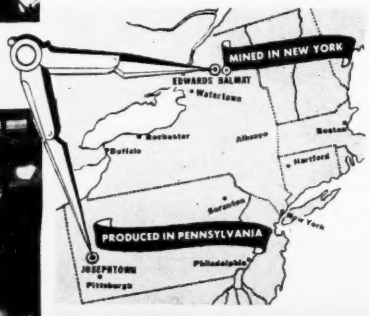
Controlled QUALITY AND UNIFORMITY from ORE to OXIDE

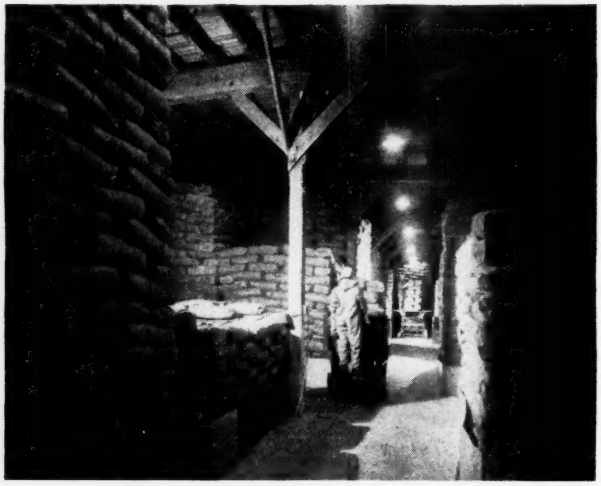
The ore from which St. Joe Zinc Oxides are produced originates in the northern part of New York where the St. Joseph Lead Company owns and operates zinc mines at Edwards and Balmat, St. Lawrence County.

After mining and milling, the zinc concentrates are shipped to the Company's smelter at Josephtown, Pa., where St. Joe Zinc Oxide is produced by a patented electro-thermic process—exclusive with the St. Joseph Lead Company.

This unity of control in production from ore to oxide is largely responsible for the product's exceptionally high purity and uniformity, and explains why St. Joe lead-free Zinc Oxides have become justly famous in the consuming industries.

From Josephtown, Pa. the finished zinc oxides, packed in paper bags and wooden barrels, are shipped to all consuming industries in the country—Josephtown being centrally located, geographically, as far as the major consumption of Zinc Oxide is concerned. In addition, stocks of St. Joe lead-free Zinc Oxides are warehoused in the principal cities of the United States.





BELOW: *Section of our Zinc Oxide storage warehouse.*

ST. JOSEPH LEAD COMPANY
250 PARK AVENUE, NEW YORK 17
ELdorado 5-3200
PLANT AND LABORATORY: JOSEPHTOWN, BEAVER COUNTY, PENNSYLVANIA

DRASTIC PRICE REDUCTIONS ON SHARPLES ETHYLAMINES

Open New Research and Industrial Fields

The recent price reductions of Sharples Ethylamines are of such magnitude as to change radically previous ideas of the chemical industry with regard to fields of application. Many processes using the Ethylamines as solvents or reactants which were formerly economically impractical should now become commercially feasible and should be reconsidered. The possible utility of the Ethylamines in your manufacturing operations warrants immediate investigation.

Sharples Ethylamines are available in unlimited quantities. Specifications and use information are given below. Samples and a complete schedule of prices will be sent promptly upon request.

Specifications	Monoethylamine (70% aqueous sol'n)	Diethylamine	Triethylamine
Color	Water-white	Water-white	Water-white to light straw
Specific Gravity @ 20/20° C.	0.79 - 0.80	0.71	0.74 - 0.76
Water Insolubles	None	None	—
Minimum Amine Content	70.0% as Monoethylamine	98.0% as Diethylamine	88.0% as Triethylamine
Distillation: Initial boiling pt.	—	53.0° C. minimum	72.0° C. minimum
Final boiling pt.	—	59.5° C. maximum	95° C. maximum

PRESENT AND SUGGESTED USES

MONOETHYLAMINE 70% aqueous solution

PETROLEUM: Solvent extraction; preparation of amides useful in refining of lubricating oil; complex salt with CuCl useful for recovery of diolefins; intermediate for preparation of demulsifier.

SOLVENT: Selective solvent in petroleum and vegetable oil refining; solvent for wide range of organic compounds.

TEXTILE: Intermediate for synthesis of surface active agents, dyestuffs and sizing compounds.

RUBBER: Synthesis of vulcanization accelerator; stabilizer for latex.

PLASTICS: Condensing agent for urea-formaldehyde molding mixtures; preparation of various nitrogen ethylated amides which are useful as plasticizers; condensation products with other resin forming materials useful as moldings, coatings, adhesives and sizing compounds.

CERAMICS: Deflocculating agent for increasing strength of clay bodies.

PHARMACEUTICALS: Synthesis of medicinals.

PHOTOGRAPHY: Synthesis of photographic dyes.

DIETHYLAMINE

PETROLEUM: Solvent extraction; preparation of amides useful in refining of lubricating oil; complex salt with CuCl useful for recovery of diolefins; intermediate for preparation of gasoline stabilizer.

SOLVENT: Selective solvent in petroleum and vegetable oil refining; solvent for wide range of organic compounds.

TEXTILE: Intermediate for synthesis of surface active agents, dyestuffs and sizing compounds.

RUBBER: Intermediate for synthesis of a number of ultra-accelerators of vulcanization and acclerator activators for natural and synthetic rubbers.

PLASTICS: Condensation with other resin forming materials to give products useful for moldings, coatings, plasticizers and polishes.

PHARMACEUTICALS: Intermediate for synthesis of certain local anesthetics, antimalarials, antiseptics and other medicinal chemicals.

COSMETICS: Intermediate for synthesis of emulsifiers.

TRIETHYLAMINE

PETROLEUM: Agent for improving recovery of catalyst in fluid cracking operations.

SOLVENT: Catalytic solvent in chemical synthesis; solvent for many organic compounds; stabilizer for certain chlorinated hydrocarbons.

TEXTILE: Preparation of wetting, penetrating and waterproofing agents of quaternary ammonium types.

RUBBER: Preparation of accelerator activator for natural and synthetic rubbers.

COSMETICS: Preparation of emulsifying agents and germicides.

(If required for specific applications, an anhydrous grade of Triethylamine is available at increased price.)

SHARPLES TRADE MARK CHEMICALS

Sharples Chemicals Inc.

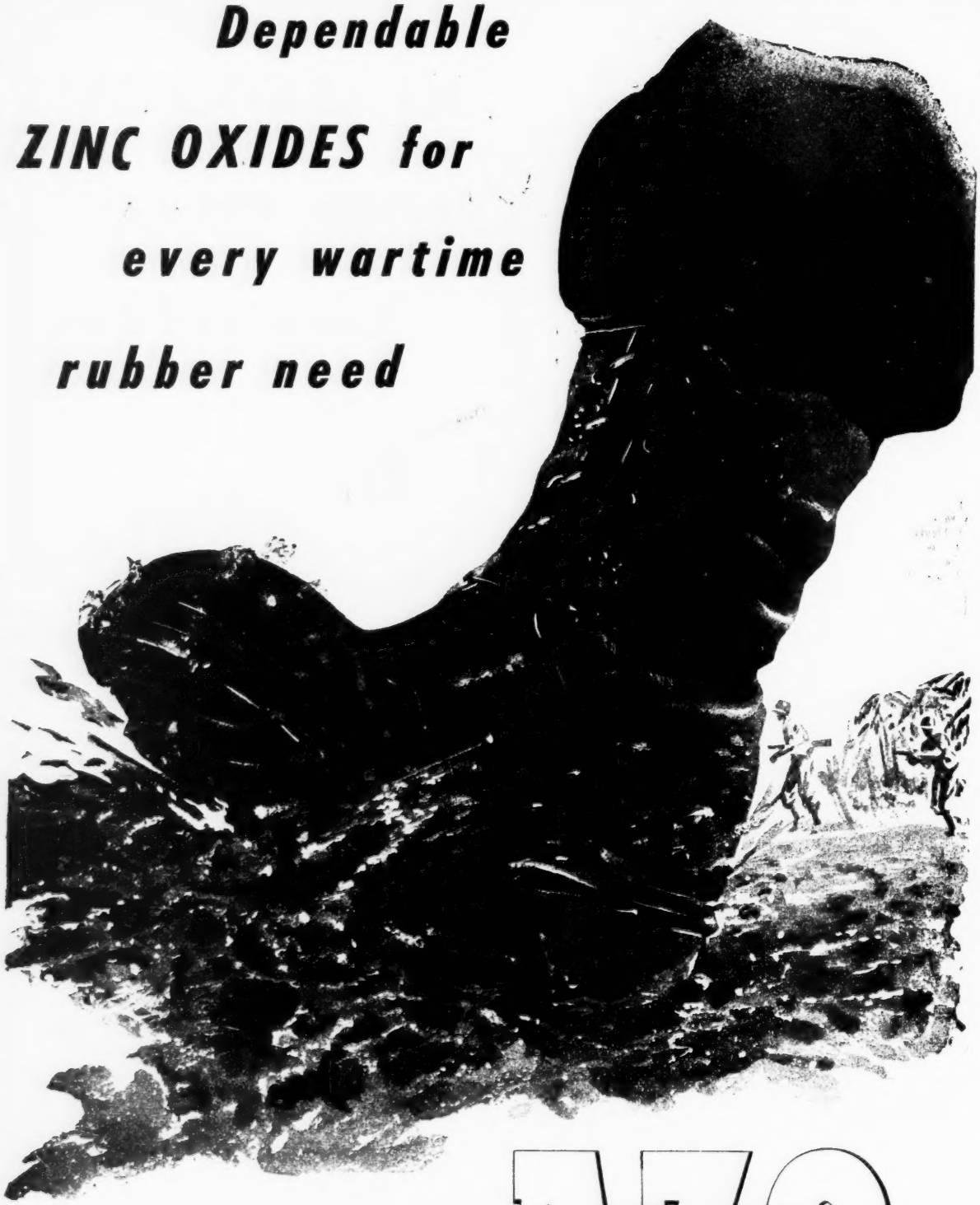
PHILADELPHIA · CHICAGO · NEW YORK

Dependable

ZINC OXIDES for

every wartime

rubber need



AZO ZINC OXIDES

AMERICAN ZINC SALES CO., Distributors for AMERICAN ZINC, LEAD & SMELTING CO.

COLUMBUS, OHIO - CHICAGO - ST. LOUIS - NEW YORK

We have been through trying times. Many problems of reconversion are still ahead.

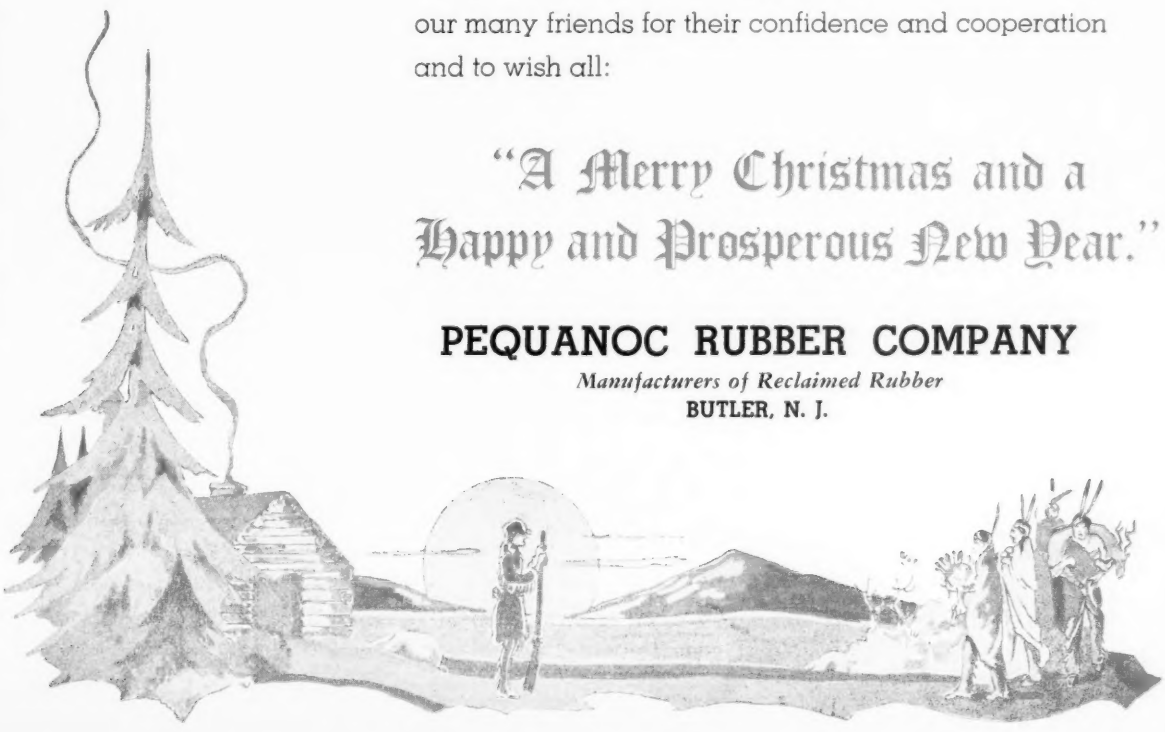
On this occasion, we are glad to take time out to thank our many friends for their confidence and cooperation and to wish all:

"A Merry Christmas and a Happy and Prosperous New Year."

PEQUANOC RUBBER COMPANY

Manufacturers of Reclaimed Rubber

BUTLER, N. J.



A NEW RESIN–

Polymel No. 6

Strikingly Unique *Low in Price*

By means of a recently developed process* a well-known viscous Asphalt is solidified without Oxidation or apparent Chemical Change.

Specially Adapted To Tire Tread and Carcass Stocks

— Excellent Processing
— Low Heat Build-up
— High Cut-growth Resistance
— Good Abrasion
— Good Aging
— No Effect on Cure
— Easy to Handle in Plant
— Unlimited Tonnage Available

A PERFECT PLASTICIZER FOR BLACK MILL-MIXED MECHANICAL GOODS STOCKS

May we send you Technical Data and Samples?

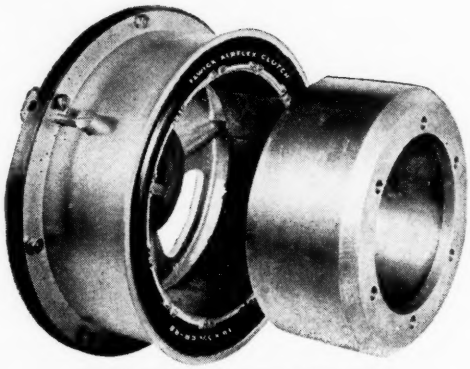
**Patent applied for*

THE CALDWELL COMPANY

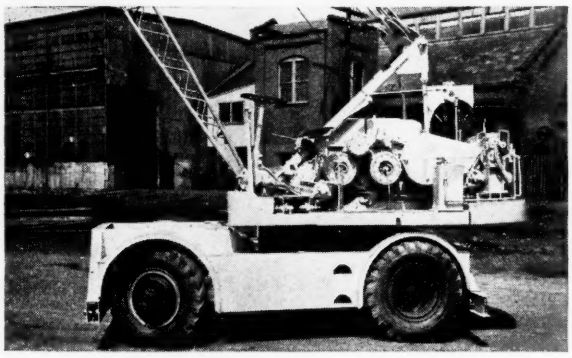
2412 First Central Tower Akron 8, Ohio

Manufactured by the Polymel Corporation, Baltimore, Md.

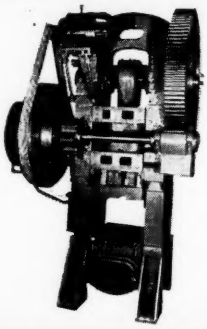
THE CLUTCH THAT SAVES YOU MONEY



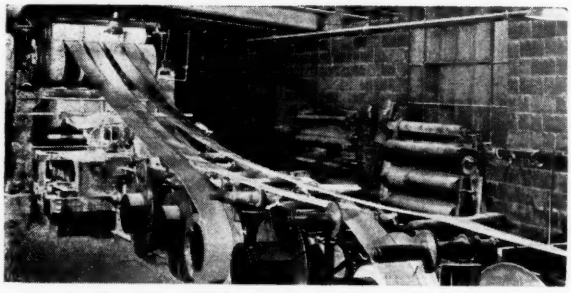
Clutch element assembly with spider



Seven Fawick Clutches are used on this new Byers ½ cu. yd. "Traveler"



250-ton press equipped with Fawick Clutch and Brake



Steel rolling mill, Fawick-equipped for smooth, even power

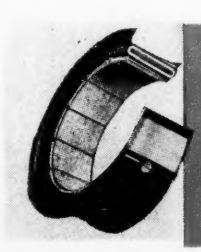
The Fawick Airflex Clutch eliminates down time because it needs no adjustment, no lubrication, no frequent replacements and repairs. It controls torque, absorbs shocks and transmits power through a cushion of air.

Grips like a tire grips the road—light or firm engagement—without springs, arms or levers.

Economy and dependable performance proved on thousands of navy ships and in hundreds of different industrial applications—for heavy-duty drives wherever the going is tough.

Tell us the conditions your equipment has to meet in operation—We'll gladly recommend the clutch best suited to the job and show you how it should be engineered. Book on request.

Crane equipped with Fawick Clutches on main drum and swinger and Fawick Power Take-off on engine



ARMY NAVY

FAWICK *Airflex* CLUTCH

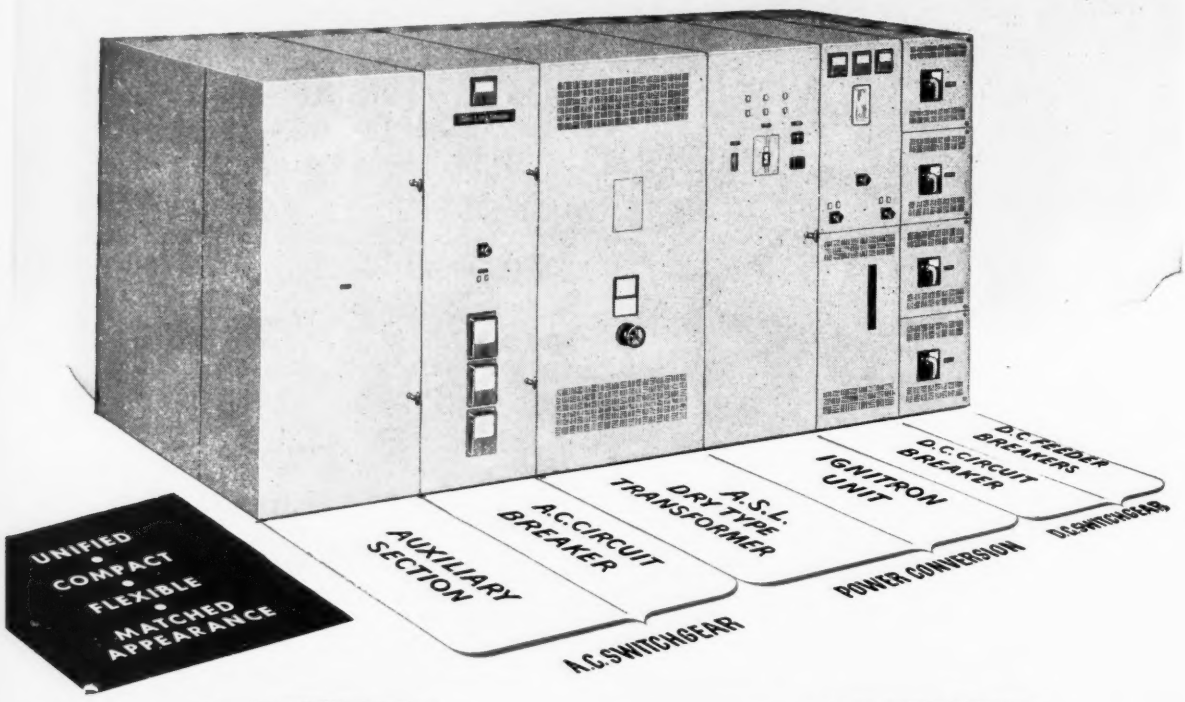
FAWICK AIRFLEX CO., INC. • 9919 Clinton Road, Cleveland 11, Ohio

In Canada, Reynold-Coventry Ltd., Montreal, Toronto, Vancouver • In Britain, Crofts Engineers, Ltd., Bradford, England

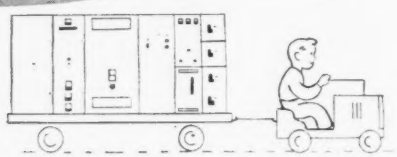
Announcing...

the Westinghouse 1946 Model

IGNITRON UNIT SUBSTATION

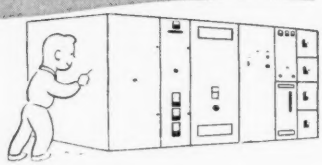


MOVE IT IN...



It's *easy* to install. Just move it in on any reasonably level floor. No special foundation or reinforcing is required; can be installed even on balconies . . .

CONNECT IT...



Simply connect the control leads, power leads and water supply—and it's ready to go to work. No air ducts or ventilating systems are required . . .

7 TIMES AS MANY RECTIFIERS PUT INTO OPERATION IN LAST 3 YEARS

Westinghouse — BEST KNOWN NAME IN

Power Conversion at its BEST

for Economical, Efficient Power Conversion A-C to D-C

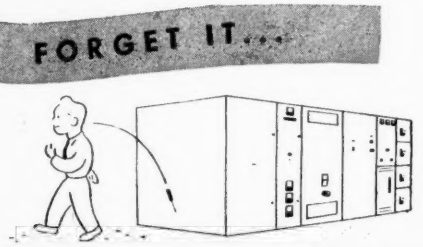
75 to 500 Kw—250-volt Class
100 to 1000 Kw—600-volt Class
or
Special Voltage Applications

The Westinghouse Sealed Tube Ignitron Unit Substation combines efficient, dependable power conversion equipment in a completely metal enclosed compact unit. The Ignitron Tubes, permanently evacuated and sealed at the factory, eliminate the need for vacuum maintaining equipment . . . thereby reducing maintenance to a minimum.

The lighter, more compact, dry-type ASL Transformer removes the disadvantages of liquid filled equipment and eliminates fire hazard completely.

The Westinghouse 1946 model Ignitron Unit Substation, employing the ASL Transformer, requires less floor space per kw than *any* other conversion equipment. Completely assembled at the factory, it provides easy installation and makes future relocation a simple operation.

CONSULT WESTINGHOUSE—Call your nearest Westinghouse office or write for B-3646—"POWER CONVERSION AT ITS BEST"—Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-10298



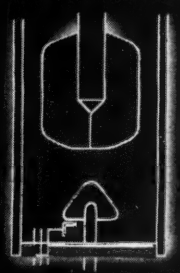
These Westinghouse Unit Substations can operate unattended, with practically no maintenance. Operation is quiet—there is no vibration. High load swings are readily handled. Momentary overloads, or even short circuits cause no damage.

. . . AS IN THE PREVIOUS 15 YEARS

CONSIDER ALL THE ADVANTAGES OF THIS IDEAL POWER UNIT

- Factory assembled
- High efficiency
- Requires NO special foundation
- Easy to install or relocate
- No special air cooling requirements
- Quiet operation...No vibration
- No starting inrush
- Low maintenance
- Instant power upon demand
- Any load demand any time, or full time

THE WESTINGHOUSE IGNITRON PRINCIPLE



provides a reliable method of starting an arc in a few microseconds, at the beginning of each conducting period and permits the arc to extinguish when the anode is not conducting current.

Each anode, with its own cathode, is mounted in a separate chamber; shields are reduced to a minimum, thereby lowering arc losses.

Electronics at Work

water dispersions THAT ADD versatility TO RUBBER

The development of water dispersed rubber opened new fields, bringing rubber's advantages to many industries . . . new uses for rubber were made feasible . . . old uses made more economical, more practical, fire-safe. Today, aqueous dispersed rubber is consumed in large quantities by industries other than rubber manufacturers . . . some representative uses are:

Tire cord solutioning

Automotive carpet backing

Carpet non-skid backing and flexible backsizing

Pile fabric backing

Flocked fabric binder

Fabric combining, coating and sizing

Rubberized curled hair binder

Paper saturation, beater size and coating

Bag and container adhesives

Shoe, luggage and leather cements

...and applicable, perhaps, to your own product.

Write for full information about Syntex* Products. Our own research staff will be happy to work with you on any special problems. The Flintkote Company, 30 Rockefeller Plaza, New York 20, N. Y.

FLINTKOTE SYNTEX RUBBER PRODUCTS

*Reg. U. S. Pat. Off.

THE FLINTKOTE COMPANY

Industrial Products Division

30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

Atlanta • Boston • Chicago Heights • Detroit • Los Angeles
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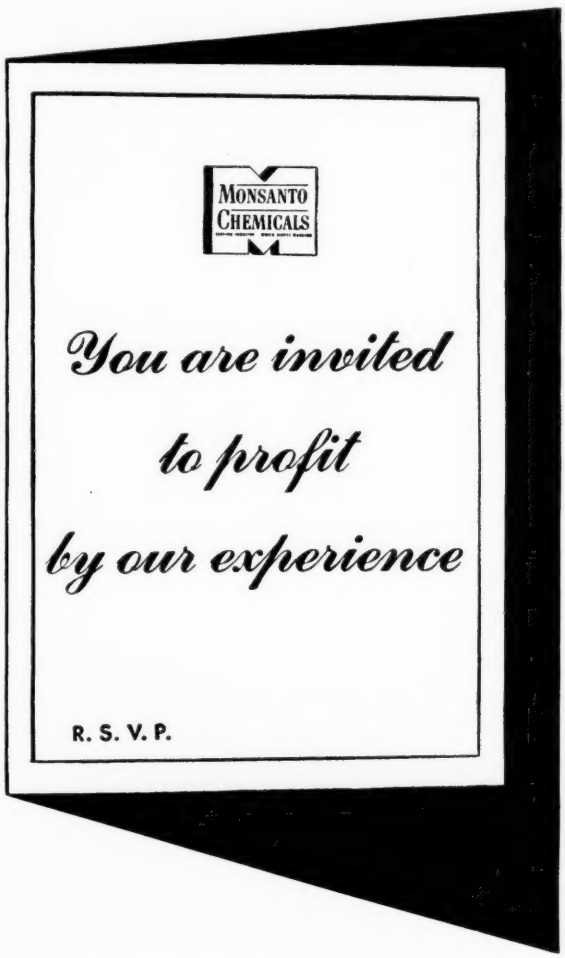

Through its Rubber Service Laboratories at Akron, Monsanto offers you the full advantage of its war-learned knowledge, backed up by twenty-five years of experience in developing and proving rubber chemicals.

The benefit of this practical experience with natural and synthetic rubber is yours for the asking and without obligation. Please write: MONSANTO CHEMICAL COMPANY, Rubber Service Department, Second National Building, Akron 8, Ohio.

MONSANTO CHEMICALS ***Serving the Rubber Industry:***

Accelerators, Antioxidants, colors, plasticizers, "Insoluble Sulfur 60," wetting agents.

Announcing a forthcoming series of illustrated

SCOTT TESTERS MAINTENANCE DATA SHEETS

to be published in our advertisements in this magazine. These Data Sheets will prove of great practical value to owners of Scott Testers.

SCOTT TESTERS, INC.
Providence, Rhode Island

MAGNESIA

MAGNESIUM CARBONATE

MAGNESIUM OXIDE

EXTRA LIGHT The Original Neoprene Type
A supreme quality product for the rubber trade. Extremely fine state of division. Improves storage stability and resistance to scorching. A curing agent unexcelled for increased modulus, greater resilience, reduced heat build-up, lower compression set and retention of tensile strength during heat service.

LIGHT A high quality product of greater density than "Extra Light," but high in MgO and low in impurities. An excellent value for many uses.

MEDIUM A good value. Very active. High Magnesia content, low in impurities. Medium density.

HEAVY All types can be furnished. Specially ground to meet the exacting Code Pigment Specifications of the Rubber Trade. Unground types for chemical uses.

PACKAGES—Specially designed to protect contents from moisture and air. Corrugated carton with special water-proof liner, and inner paper liner. Five-ply multi-wall bag, including asphalt liner.

Special Service for All Requirements of the Rubber Trade

GENERAL MAGNESITE & MAGNESIA COMPANY

Specialist in Magnesia

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ater Dispersed Rubbers and Resins

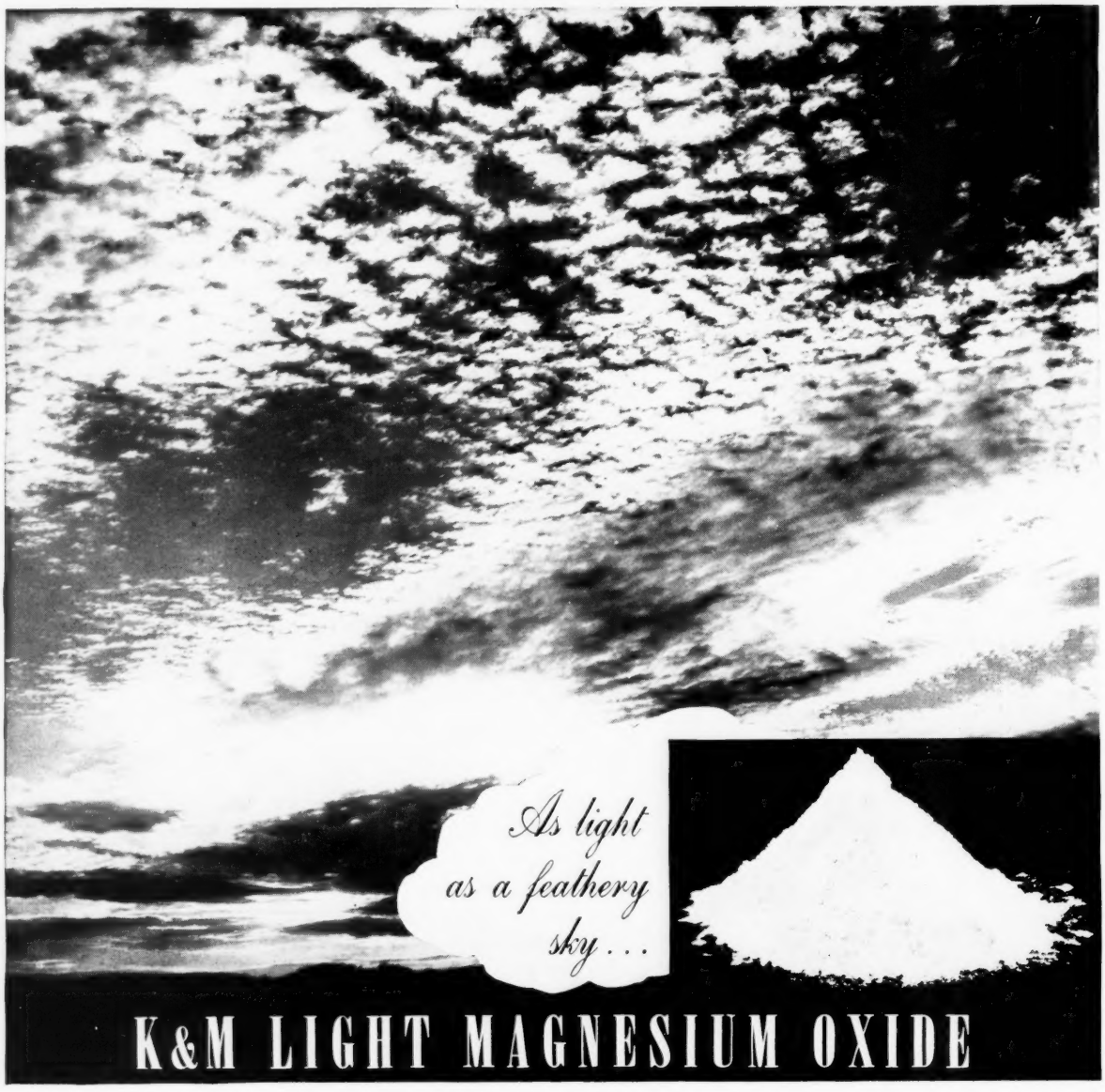
for Coating, Saturating and Bonding Fibrous Materials

Dispersions Process, In

UNDER MANAGEMENT UNITED STATES RUBBER COMPA

1230 SIXTH AVENUE, NEW YORK 20, N

In Canada: DOMINION RUBBER COMPANY, LTD., MONTR



The exacting requirements of Neoprene Compounders call for Magnesium Oxide that is uniformly light and unvarying in quality. K&M Light Magnesium Oxide provides the surest answer to these needs because: (1) it is manufactured by America's oldest and most experienced makers of magnesia products; (2) it undergoes careful laboratory control from the raw material stage to finished product; (3) it is furnished in *one*, and only one grade—the highest quality obtainable.

Large supplies are available. Prompt warehouse delivery.

KEASBEY & MATTISON
COMPANY. AMBLER. PENNSYLVANIA

OUR DISTRIBUTOR FOR K&M LIGHT MAGNESIUM OXIDE IS:

AMERICAN CYANAMID & CHEMICAL CORPORATION

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WITH SALES REPRESENTATIVES TO THE RUBBER INDUSTRY AND STOCK POINTS:

AKRON, OHIO, Akron Chemical Company
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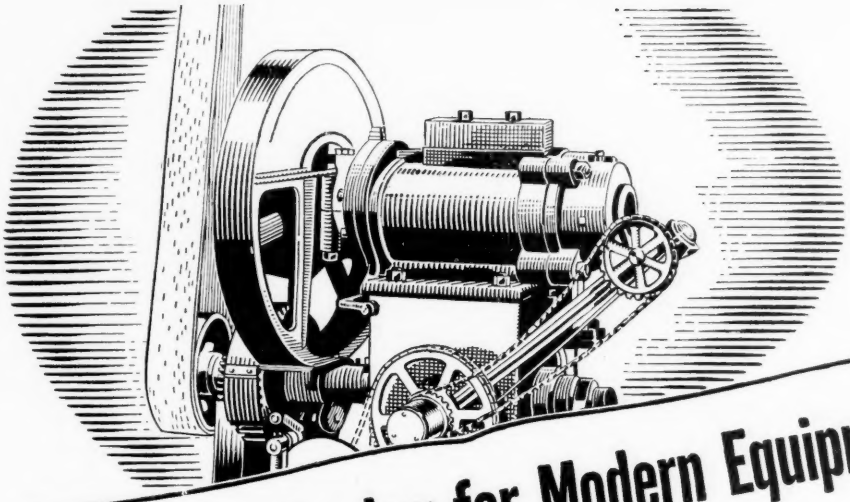
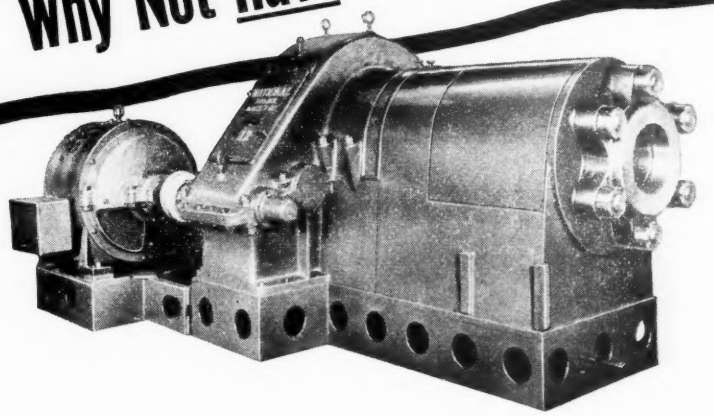
CHICAGO, ILLINOIS, Herron & Meyer
LOS ANGELES, CAL., H. M. Royal, Inc.
TRENTON, N. J., H. M. Royal, Inc.



You're Paying for Modern Equipment! Why Not Have It?



IT is no economy to use antiquated rubber extruding equipment. Sluggish production, low efficiency, and high upkeep can add up within a few years to expenses greater than the cost of a new up-to-date National Extruder. Think of it! You may be laying out enough in *hidden costs* to more than pay for the modern equipment your business could so profitably use in the coming days of competitive selling.

In scores of rubber plants, National Extruders are getting out the work *faster, cheaper,* and *better* than was even remotely possible with old, obsolete machines.

Whatever your requirements remember this: National Heavy Duty Extruders are designed for high production of today's new and different compounds . . . for flexibility, yet uniformly better quality.

In screw sizes from 2″ to 12″ and in special sizes and combinations, there's a National Extruder to meet *your* requirements. Let us show you what *up-to-date* equipment can do for you. Write National Rubber Machinery Company, 918 Sweitzer Ave., Akron 11, Ohio.

NATIONAL RUBBER MACHINERY CO.
General Offices: AKRON 11, OHIO

Creative Engineering

VISTANEX POLYBUTENE
VISTAC

Now
Freely Available

We are pleased to announce that both Vistanex Polybutene and Vistac have been released from all restrictions and are now available to the industry.

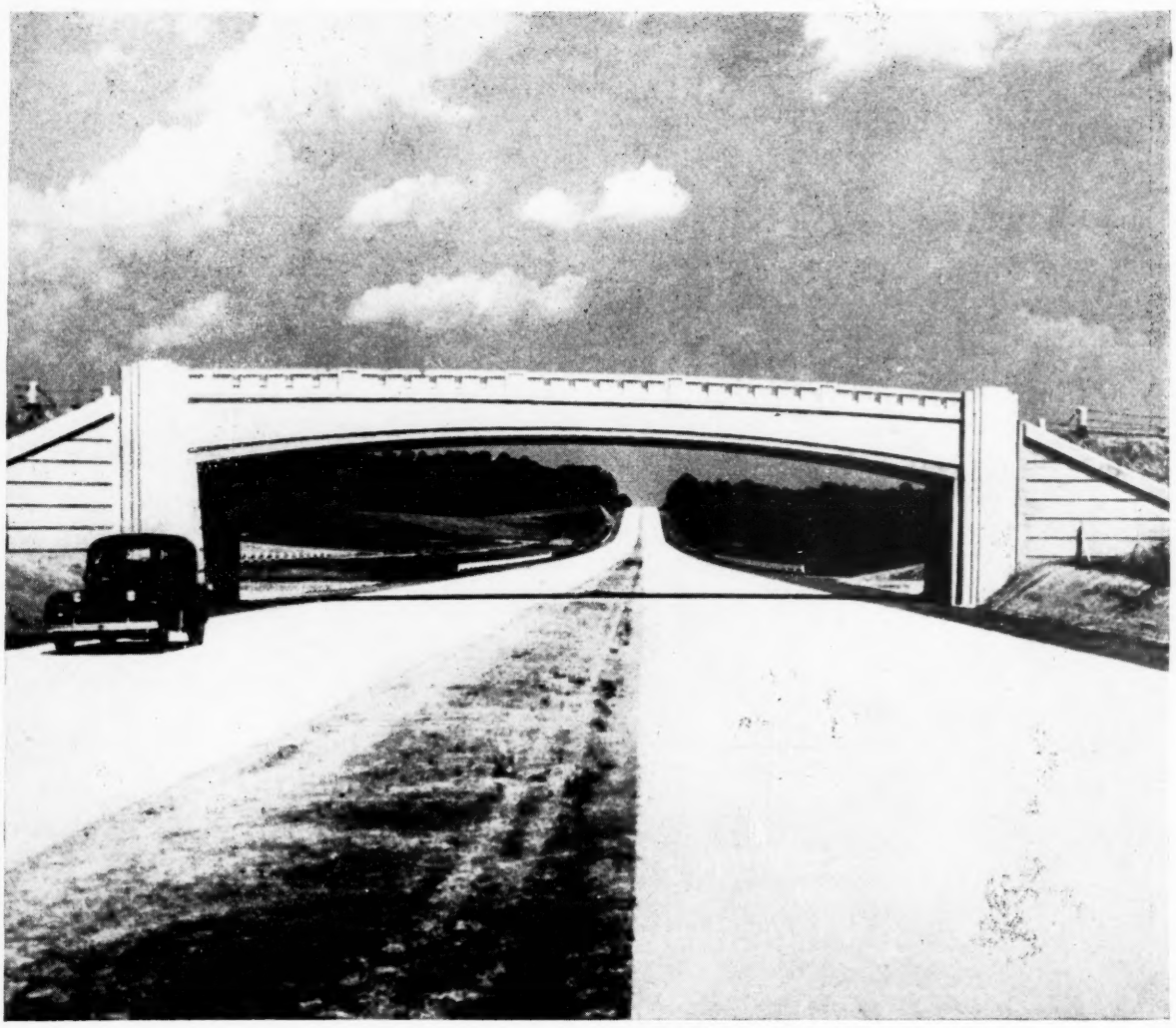
During the war, these materials were only available for highest priority use, but can now be supplied for all purposes.

Vistanex Polybutene and Vistac, being substantially colorless, non-oxidizing, non-vulcanizing hydrocarbons, we particularly recommend these products for pressure sensitive adhesives, adhesive cements and in rubber compounding for superior aging and heat resistance.

Our laboratory will be glad to cooperate with you on your technical problems and supply you with all required data and information.

ADVANCE SOLVENTS & CHEMICAL CORP.

245 Fifth Avenue, New York, N. Y.



There'll be some changes made

THE highways of the nation, long nearly empty, are beginning to fill up—and will fill up *fast* as soon as new cars are available in quantity. More than 4,000,000 new cars will be built in 1946, with proud owners raring to go.

Riding with them in these new cars will be an average of 35 pounds of reclaimed rubber—in tires, floor mats, extruded strip, battery cases, and in other forms. That means *70,000 tons* of reclaimed rubber used by just one part of one industry. Much of it will be Philadelphia Reclaimed rubber, a truly *important* material that will never be replaced by natural or synthetic rubbers.

That's because Philadelphia reclaim continues to be the most economical material to use in the manufacture of many rubber parts. It's stable and dependable—easy to use and easy to get results with. Within its field, Philadelphia Rubber can offer the rubber industry economy of manufacture of quality products, a low selling price for the finished product, and a fair margin of profit, even in highly competitive markets.

Philadelphia Rubber's technical staff continues at your service to help you solve any problem having to do with reclaimed rubber—natural or synthetic. The Philadelphia Rubber Works Company, Rose Building, Cleveland 15, Ohio.

PHILADELPHIA
RECLAIMED RUBBER

HARDESTY PLASTICIZERS GIVE YOU

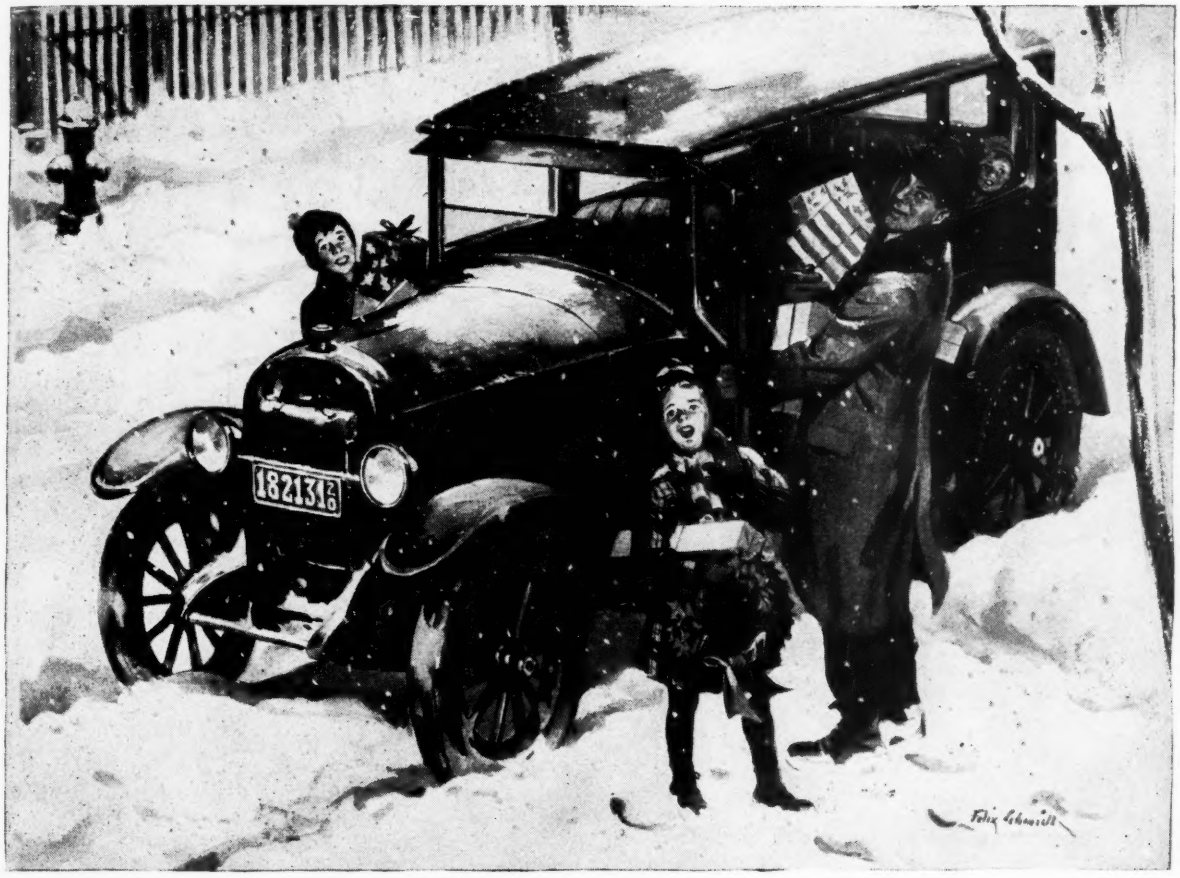
1. LOW TEMPERATURE FLEXIBILITY
2. HIGHEST PLASTICIZING POWER
3. HIGH SOLVENCY AND
4. WIDE COMPATIBILITY

WHEN USED WITH

VINYL COPOLYMERS
POLYVINYL CHLORIDE
POLYVINYL BUTYRAL
NITRO-CELLULOSE
CELLULOSE ACETOBUTYRATE
ACRYLIC RESINS AND
SYNTHETIC RUBBERS

HARCHEM
PLASTICIZERS
Alkyl Roleates
Dibutyl Sebacate
Capryl Alcohol

HARDESTY CHEMICAL CO, INC., 41 EAST FORTY-SECOND STREET, NEW YORK 17, N.Y.



To the Country for Christmas, 1920

By 1920 the jingle of sleighbells had begun to give way to the clank of tire chains on country roads and city streets as more and more people, anxious to "get there" in winter as well as summer, kept the family car out of storage and on the go all year 'round.

Here was perhaps the greatest test that tires had ever been called upon to meet. Cold weather, icy ruts and the wear and tear of chains reduced their mileage and increased the risk of blowouts. The rubber industry met the challenge with better tire construction and the increasing use of carbon black, that magic rubber reinforcing material For carbon black has proved a key material with which tire makers have increased wear resistance—until by 1941 mileages of 35,000 or more were taken for granted!

Witco Chemical Company, founded in 1920, early recognized the vital importance of carbon black to the future development of the rubber industry... went into its production on a large scale... and has worked constantly to improve its effectiveness through research on better production methods. Today Witco blacks are helping to lengthen the service of all types of synthetic rubber products in all climates—from tropic heat to arctic cold. They are among the vital materials that have aided in making our great synthetic rubber program a smashing success.

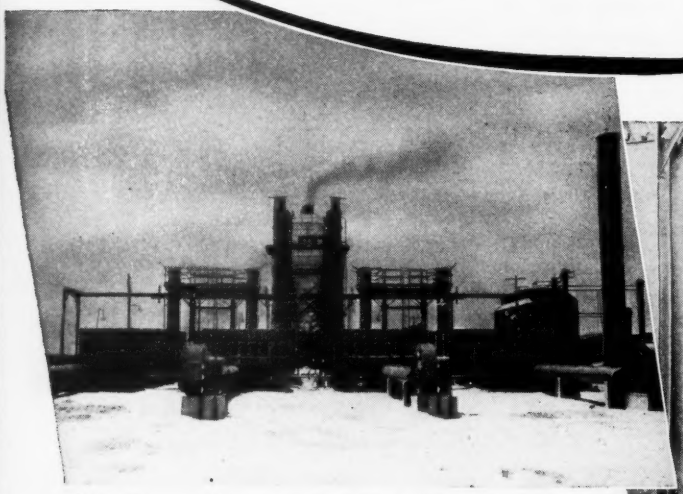
Today, Witco offers a complete line of carbon blacks not only for rubber compounding but for use in paints, printing inks, paper, plastics and other industries. It is an important part of Witco's increasingly broadening service to America's process industries.

WITCO CHEMICAL COMPANY MANUFACTURERS AND EXPORTERS

[Formerly Wishnick-Tumpeer, Inc.]

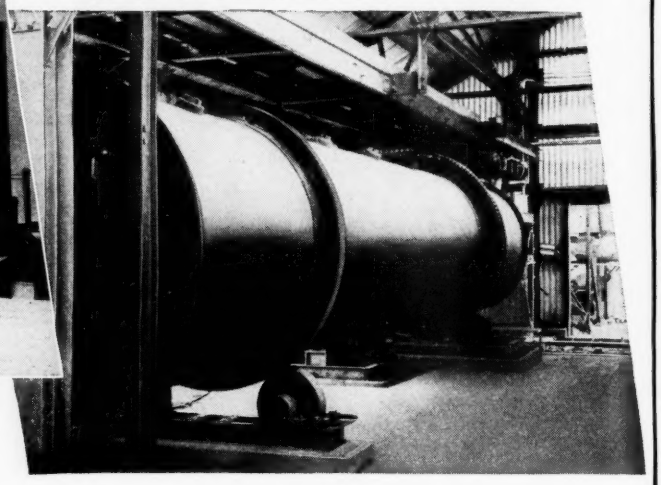
295 MADISON AVENUE, NEW YORK 17, N. Y. • Boston • Chicago • Detroit • Cleveland • Akron • London

AN ALL TYPE... ALL QUALITY SERVICE IN CARBON BLACK



(Above) Newest addition to Continental's facilities is this modern furnace black plant designed for efficient, rigidly controlled production of CONTINEX SRF.

(Below) One of the modern Pelletizing Drums in Continental's new Channel Carbon Black Plant in Sunray, Texas.



Among the facilities that make Continental a complete, well rounded source of supply for carbon black is a new furnace type black plant recently completed at Sunray, Texas. This modern new Witco plant is especially designed to meet the increasing demand for Continental SRF, which delivers exceptional strength and loading capacity plus higher rebound resilience and long service life.

In addition, another new Continental plant is now producing large quantities of high quality channel blacks. These combined facilities of Continental provide one of the most up-to-date services in carbon black available today. They cover every requirement for the production of all types of both natural and synthetic products...and are backed by the cooperation of the Witco research laboratories

NEW AND COMPLETE—A new Carbon Black Manual, giving comprehensive, up-to-date facts on the properties and applications of channel and furnace blacks produced by Continental and Witco. Write for your copy.

CONTINENTAL CARBON COMPANY

MANUFACTURER

CONTINENTAL CHANNEL AND FURNACE BLACKS

WITCO CHEMICAL COMPANY

DISTRIBUTOR

MANUFACTURERS AND EXPORTERS

This illustration, taken from Bulletin 175, shows two tread sections extruded from the same stock. Note that sample A, extruded from an F-B *Roller-Feed* machine, is very dense and uniform, while sample B produced by another type tuber, is porous.

16 pages about better lower cost extrusion

Here is a booklet that deserves the attention of everyone interested in lower-cost extrusion and improved quality of product. It is a new bulletin we have prepared to give you the complete story of better, faster production possible with the Farrel Roller-Feed *Tubing and Straining machine.*

The bulletin explains the operation of the *Roller-Feed,* an exclusive feature that automatically feeds an unvarying supply of stock to the screw. This method of constant, uniform feeding results in the following advantages of "dollars and cents" importance to you:

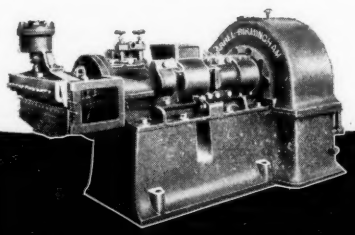
1. **INCREASED OUTPUT**—Increased production rates, ranging from 10% to 25% over machines of conventional design.
2. **IMPROVED QUALITY**—Crowding action of the *Roller-Feed* eliminates trapped air and keeps a constant amount of stock in the extrusion chamber. This assures an extruded section of greater density and uniformity than is otherwise possible. (See illustrations at left.)
3. **LESS SKILL REQUIRED FOR BEST RESULTS**—The *Roller-Feed* is well adapted to strip feeding and has a special advantage when the machine is hand fed. Since correct stock pressure in the screw is maintained automatically, the uniformity of density and gauge is not dependent upon the operator.
4. **GREATER OPERATING SAFETY**—The operator does not risk fingers or hand by manually starting the stock into the screw. The strip is fed in automatically by the *Roller-Feed.*

For complete information on this high-speed, low-temperature production unit, send for your FREE copy of Bulletin No. 175 today.

FARREL-BIRMINGHAM COMPANY, INC. • ANSONIA, CONN.

Plants: Ansonia, Derby and Stonington, Conn., Buffalo, N. Y.
Sales Offices: Ansonia, Buffalo, New York, Pittsburgh, Akron, Los Angeles, Tulsa, Houston, Charlotte

FB-264



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For Over 70 Years

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...NOT WITH PARADORS

PARADORS for RUBBER are the result of Givaudan's long specialized experience in the field of industrial deodorants. They are available for all types of synthetic polymers and are now being used with outstanding success by many rubber manufacturers.

PARADORS are obtainable in a wide variety of odor characteristics and price ranges—and new PARADORS can be developed by our technicians to solve individual problems. We offer you cooperation without obligation. Write today for full information.

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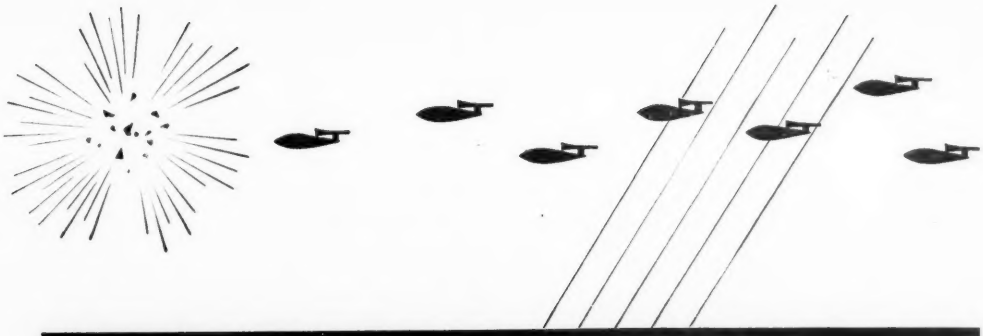
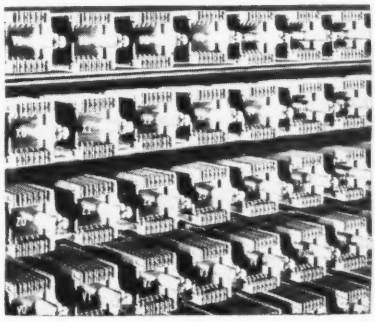
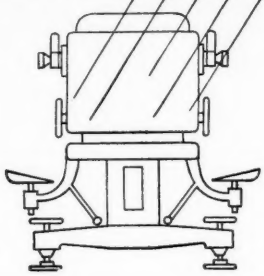


Target practice with Relays and Keys





(Left to right) The operator punches the problem data on tape, which is fed into the computer. The solution emerges in the teletype receiver. Relays which figure out the problem look like your dial telephone system.

In designing the gun-control systems which shot down enemy planes, Army ballistic experts were faced by long hours of mathematical calculations.

So Bell Laboratories developed an electrical relay computer. It solved complicated problems more accurately and swiftly than 40 calculators working in shifts around the clock.

Resembling your dial telephone system, which seeks out and calls a telephone number, this brain-like machine selects and energizes electric circuits to correspond with the numbers fed in. Then it juggles the circuits through scores of combinations corresponding to the successive stages of long calculations. It will even solve triangles and consult mathematical tables. The operator hands it a series of problems with the tips of her fingers – next morning the correct answers are neatly typed. Ballistic experts used this calculator to compute the performance of experimental gun directors and thus to evaluate new designs.

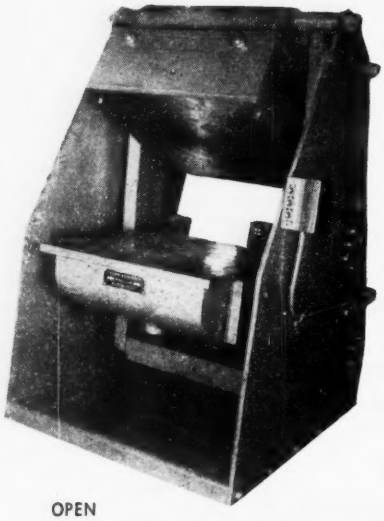
In battle action, Electrical Gun Directors are, of course, instantaneous. Such a director helped to make the port of Antwerp available to our advancing troops by directing the guns which shot down more than 90% of the thousands of buzz bombs.

Every day, your Bell System telephone calls are speeded by calculators which use electric currents to do sums. Even now, lessons learned from the relay computer are being applied to the extension of dialing over toll lines.

BELL TELEPHONE LABORATORIES

EXPLORING AND INVENTING, DEVISING AND PERFECTING FOR CONTINUED IMPROVEMENTS AND ECONOMIES IN TELEPHONE SERVICE

STANMOCO OIL HYDRAULIC VULCANIZING PRESS



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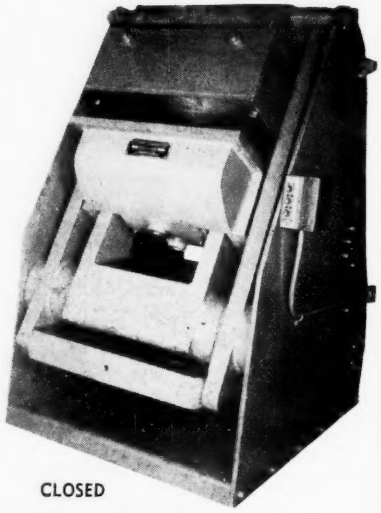
For mechanical rubber and plastic articles. Combination oil hydraulic and toggles with platen pressure of 200 tons. Platens 34″ x 34″ with daylight opening 14½″. May be adjusted for slight variation of mold thickness. Simple in construction and easy to lubricate and maintain. Easily controlled.

Write for complete details.



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The Akron Standard Mold Co.

Akron "The Established Measure of Value" Ohio

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Agents of Rubber Reserve Company for Natural Latex. Distributors of GR-S Latex

Rubber Latex Compounds
Synthetic Rubber Latex Compounds
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Synthetic Latex Adhesives
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OUTLOOK...
Rubber manufacturers who take pride in the brightness of their white and tinted rubber products may look to the future with confidence.
Natural rubber will soon be available . . . and TITANOX will be in a better position than ever to play its important part in the making of whiter, brighter rubber goods.
On the other hand, synthetics have earned a permanent place in the rubber picture. Here again TITANOX is doing an excellent job . . . achieving the greatest possible whitening effect.
TITANOX pigments are noted for extreme whiteness, high tinting strength, fine particle size and reinforcing qualities. Wherever white rubber is compounded . . . natural or synthetic . . . TITANOX is preferred.
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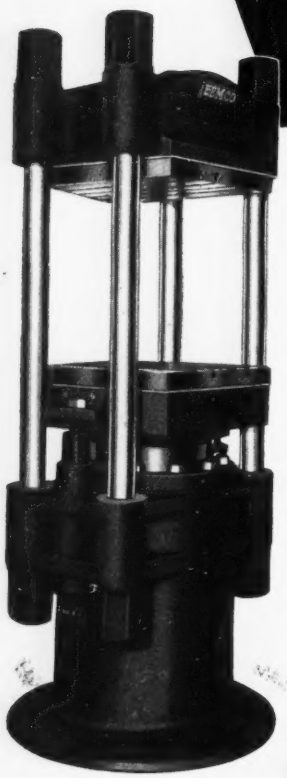
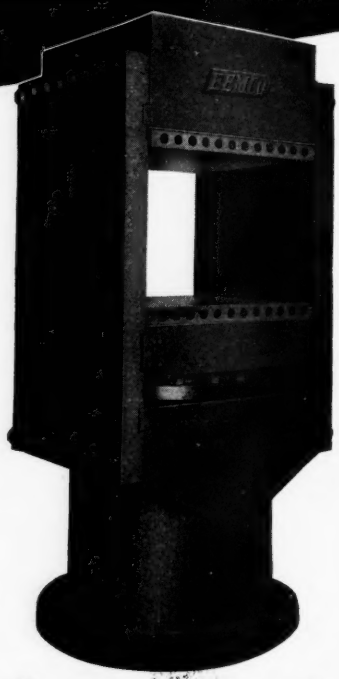
PRESSES

FOR RUBBER & PLASTICS PROCESSING





Manufactured in all sizes, EEMCO hydraulic presses are furnished with or without self-contained pumping units or special features. Built for heavy duty and especially designed to save you money on maintenance and operating costs. It will pay you to consult with EEMCO engineers on all rubber and plastics processing machinery needs.

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We also manufacture Mold Lubricants for use with synthetic as well as natural rubber.

★ *IMPROVE YOUR PRODUCTS by having us treat your fabrics to render them . . .*

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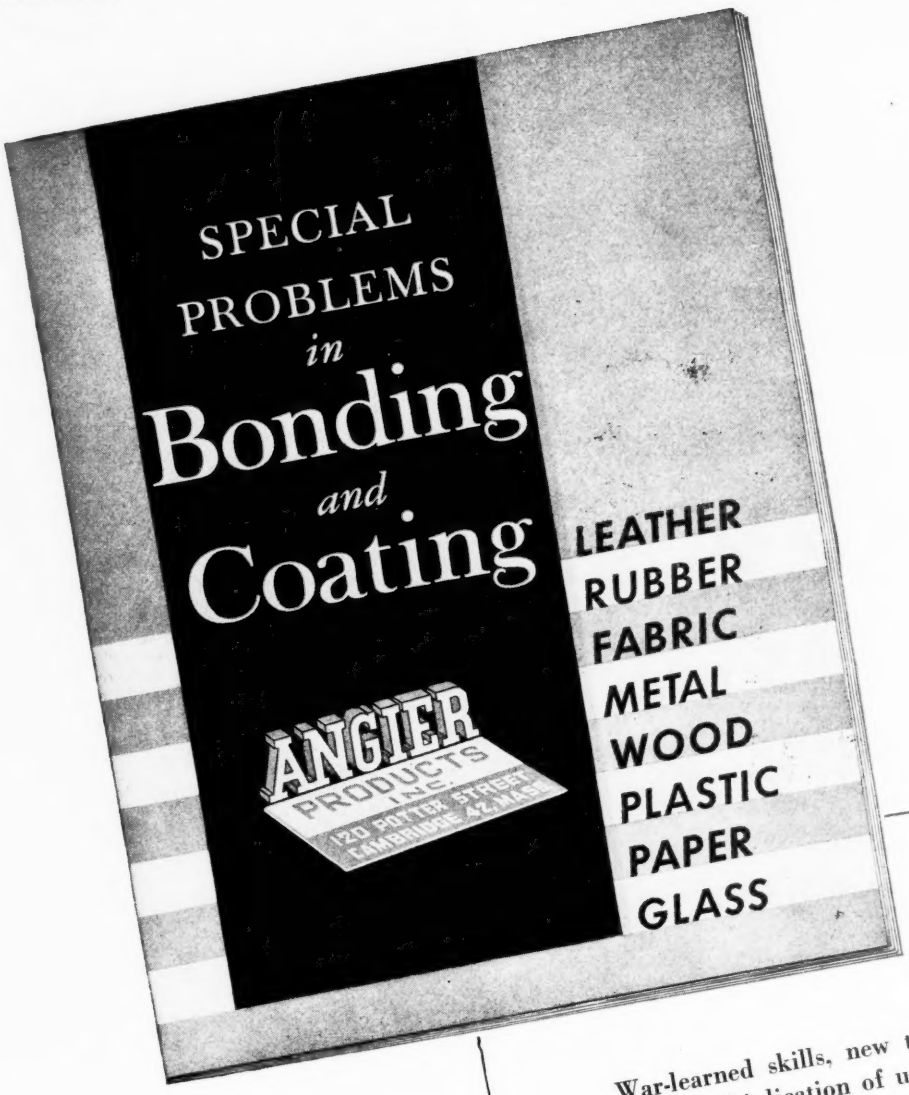
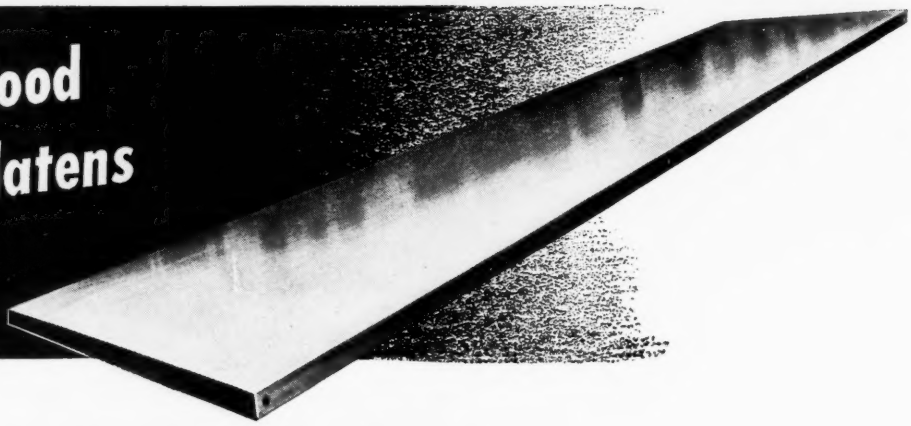


War-learned skills, new techniques and the multiplication of uses for adhesives, cements, coatings and laminants are the theme of this illustrated brochure. It will suggest to you how the long experience and the laboratory and manufacturing facilities of Angier Products, Inc. can be put to work for you in solving today's pressing production problems. A request on your letterhead will bring a copy of this brochure to your desk.

ANGIER
PRODUCTS
INC.
120 POTTER STREET
CAMBRIDGE 42, MASS.

GOOD PROCESSING IN YOUR PLANT STARTS IN OUR LABORATORY

R. D. Wood steam platens



...have 3 outstanding advantages

1. Uniform heat distribution—platen holes drilled on a special horizontal multiple-spindle drill press that insures straightness, accurate center-line location and uniform spacing.

2. Accurately-machined surfaces—platens regularly furnished with surfaces parallel to within .003", regardless of size. For presses of extreme accuracy, parallelism maintained within .0015". Surface can be finished as required from ordinary smooth tool finish to a highly polished surface.

3. Permanently steam-tight—Wood's welded strip or plug construction remains permanently leak-proof under the most severe operating conditions.

R. D. Wood's facilities for steam platen construction covers units of every practical size, shape and thickness, for use in rubber, plastic, wallboard and other fields. Write us today!

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PHILADELPHIA 5, PA.

SYNTHETIC RUBBER

PLUS

GY-4

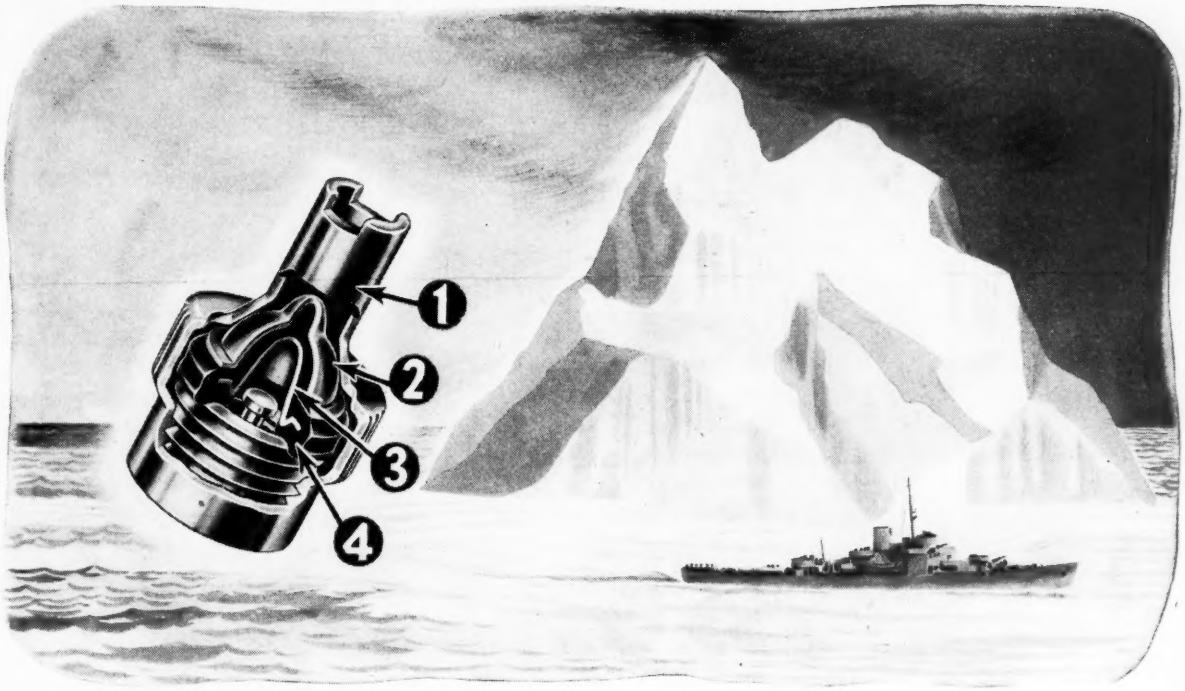
PLASTICIZER

EQUALS

NATURAL RUBBER PROCESSING

A stabilized product that reduces the heat created by friction and does not volatilize during the mix or rob the stock of the necessary tack.

GALEY MANUFACTURING COMPANY
17700 LAKE SHORE BLVD. CLEVELAND 19, OHIO



SEAL WINTER OUT

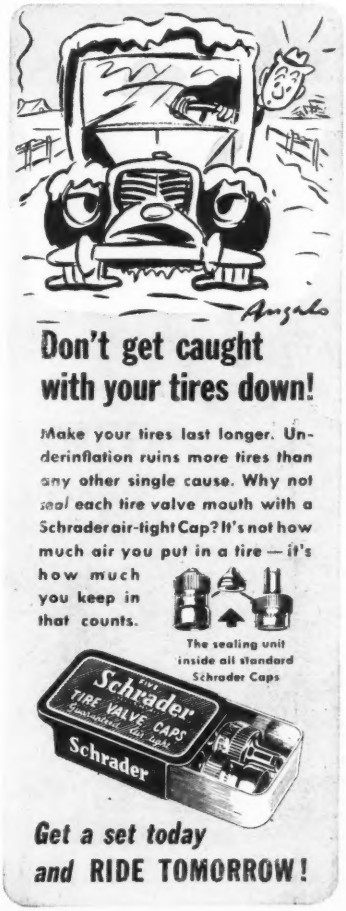
WINTER is tough on tires and unprotected valves. Schrader Caps help protect them by keeping slush, water and snow from entering the valve and freezing inside. They make a positive seal that *keeps air in—dirt and water out.*

Standard Schrader Caps with their 1-2-3-4 piece construction are rugged. They *seal winter out* and help prevent underinflation which breaks down sidewalls and ruins tires.

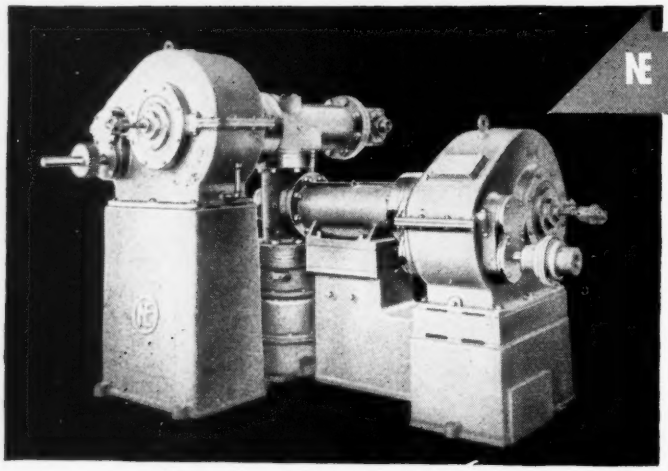
The Schrader advertisement (reproduced at the right) will appear in December in such publications as *The American Weekly, Collier's, The Saturday Evening Post, Capper's Farmer* and *Country Gentleman*—telling your customers to "Make your tires last longer" by capping every valve.

Check your stock of Schrader Products and order your needs now.

AIR-TIGHT CAPS are vital for TIRE CONSERVATION


Don't get caught with your tires down!
Make your tires last longer. Underinflation ruins more tires than any other single cause. Why not seal each tire valve mouth with a Schrader air-tight Cap? It's not how much air you put in a tire — it's how much you keep in that counts.
The sealing unit inside all standard Schrader Caps
Schrader
TIRE VALVE CAPS
Schrader
Get a set today and RIDE TOMORROW!

A. SCHRADER'S SON, *Division of Scovill Manufacturing Company, Incorporated,* BROOKLYN 17, NEW YORK



4½" NE Triple Stage Extruder with five heat control zones

NE *Triple* STAGE EXTRUDERS

National Erie engineers have recently developed a compact 3 stage extruder that offers thorough plasticizing of difficult plastics.

An independent drive is provided in each stage with progressive controlled heating.

NE single, double and triple stage extruders permit us to offer the right extruder for the job. Consult with NE engineers.

Write for Booklet

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Sodium Hydrosulphide
Stripper, Textile
Sulphur
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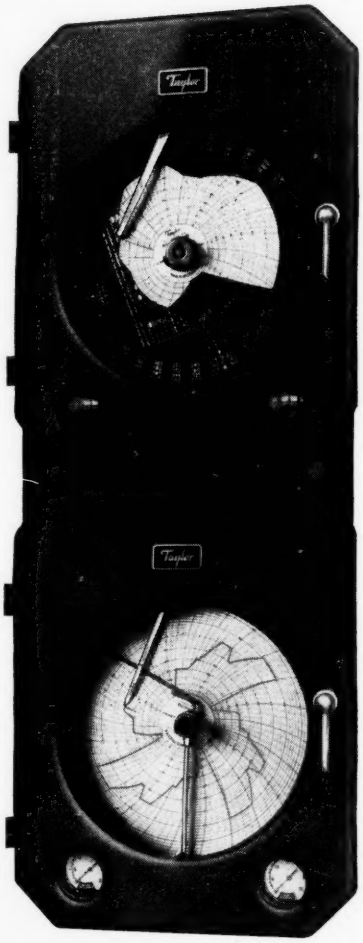
636 California St., San Francisco 8, Cal.
555 So. Flower St., Los Angeles 13, Cal.
424 Ohio Building, Akron 8, Ohio
North Portland, Oregon
Houston 2, Texas
Orlando, Florida

What you do:

IF you want to make synthetic rubber "act natural", ask your Taylor Field Engineer about putting in a Taylor Fulscope Time Schedule Controller. All *you* do is load up the press and push the button!

What we do:



OUR Time Schedule Controller does *all* the rest of the job. Here's what it gives you:

1. Precise temperature control on a time-schedule basis
2. Controlled rate of rise to curing temperature
3. Curing time adjustable in 1 to 6 ratio
4. Discharges condensate throughout cure
5. Shuts off steam at end of cure
6. Opens blow-down valve
7. Cam stops at starting position for next run

This Taylor Time Schedule Controller will run any vulcanizing operation accurately and automatically. In fact, it's probably one of the most versatile instruments ever built! Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada.

Instruments for indicating, recording and controlling temperature, pressure, humidity, flow and liquid level.

ARMY NAVY

Taylor Instruments

MEAN

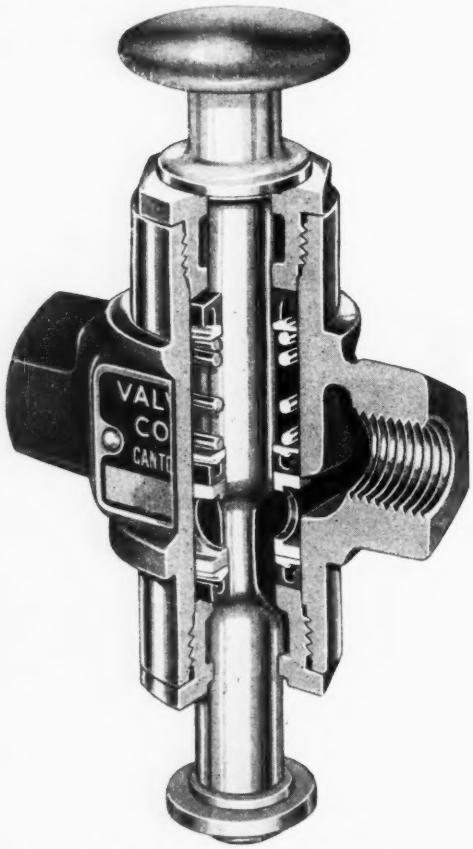
ACCURACY FIRST

IN HOME AND INDUSTRY

VALVAIR

TRADE MARK

AIR CONTROL VALVES



KNOB OPERATED VALVE SHOWN

Valvair valves are new in design and principle, standard valves have been operated more than two million times without leak with air pressure exceeding 100 lbs. They are designed for indefinite life and exceptionally hard service.

They are compact—they do not have metal seals—the body is made of cast bronze and steel parts are made of stainless steel—they will not corrode.

They are made in five sizes—¼, ⅜, ½, ¾ and 1 inch—and in two-way, three-way, and four-way types. They can be furnished in eight or more different designs—knob, lever, foot, cam, clevis, single diaphragm, double diaphragm or solenoid operated.

They will control air efficiently up to 200 lbs. pressure with a very light movement. The area through the valves is equivalent to pipe size with minimum pressure drop. Write for literature.

THE SINCLAIR-COLLINS VALVE COMPANY
454 Morgan Avenue
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VULCANIZED VEGETABLE OILS

—RUBBER SUBSTITUTES—

Types, grades and blends for every purpose, wherever Vulcanized Vegetable Oils can be used in production of Rubber Goods—be they Synthetic, Natural, or Reclaimed.

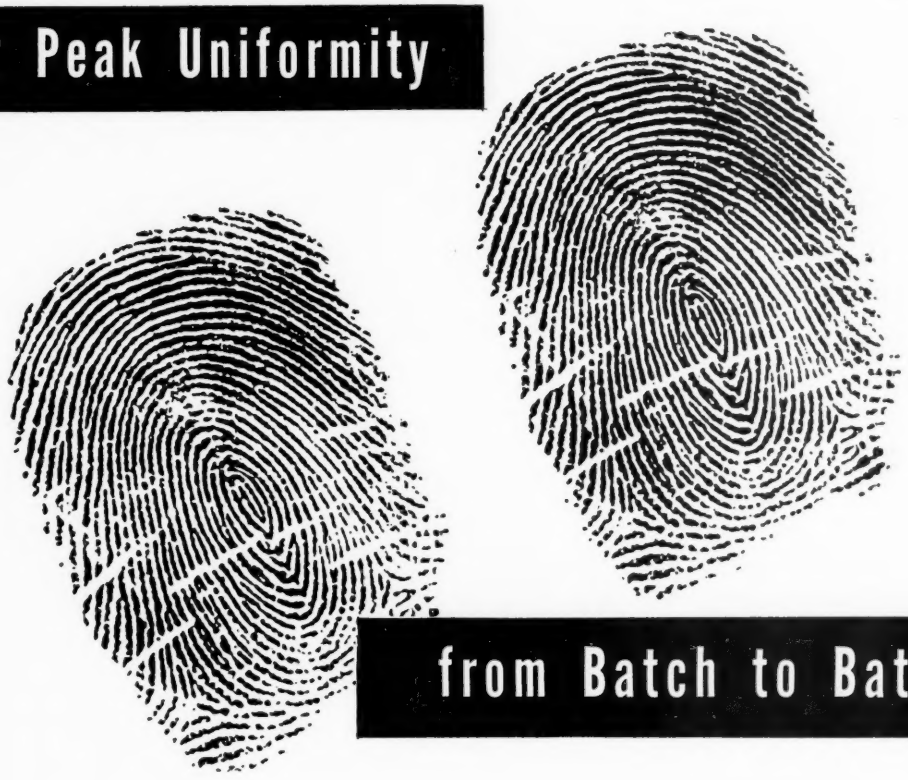
A LONG ESTABLISHED AND PROVEN PRODUCT

THE CARTER BELL MFG. CO.
SINCE
CARTER BELL PRODUCTS
1903
SPRINGFIELD, NEW JERSEY

WORLD'S LARGEST PRODUCER OF SYNTHETIC RESINS

RCI

For Peak Uniformity



from Batch to Batch

RCI DIBUTYL PHTHALATE

For uniformity of end products you need uniform ingredients—and that's exactly what you get when you utilize RCI Dibutyl Phthalate for plasticizing Vinyl, Neoprene and Buna N synthetic rubbers. *Its quality is constant because RCI's system of production control tolerates nothing less.* Write to the Sales Department for further data on this thoroughly dependable controlled-quality plasticizer.

ARMY E NAVY

REICHHOLD CHEMICALS, INC.

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Other Plants:

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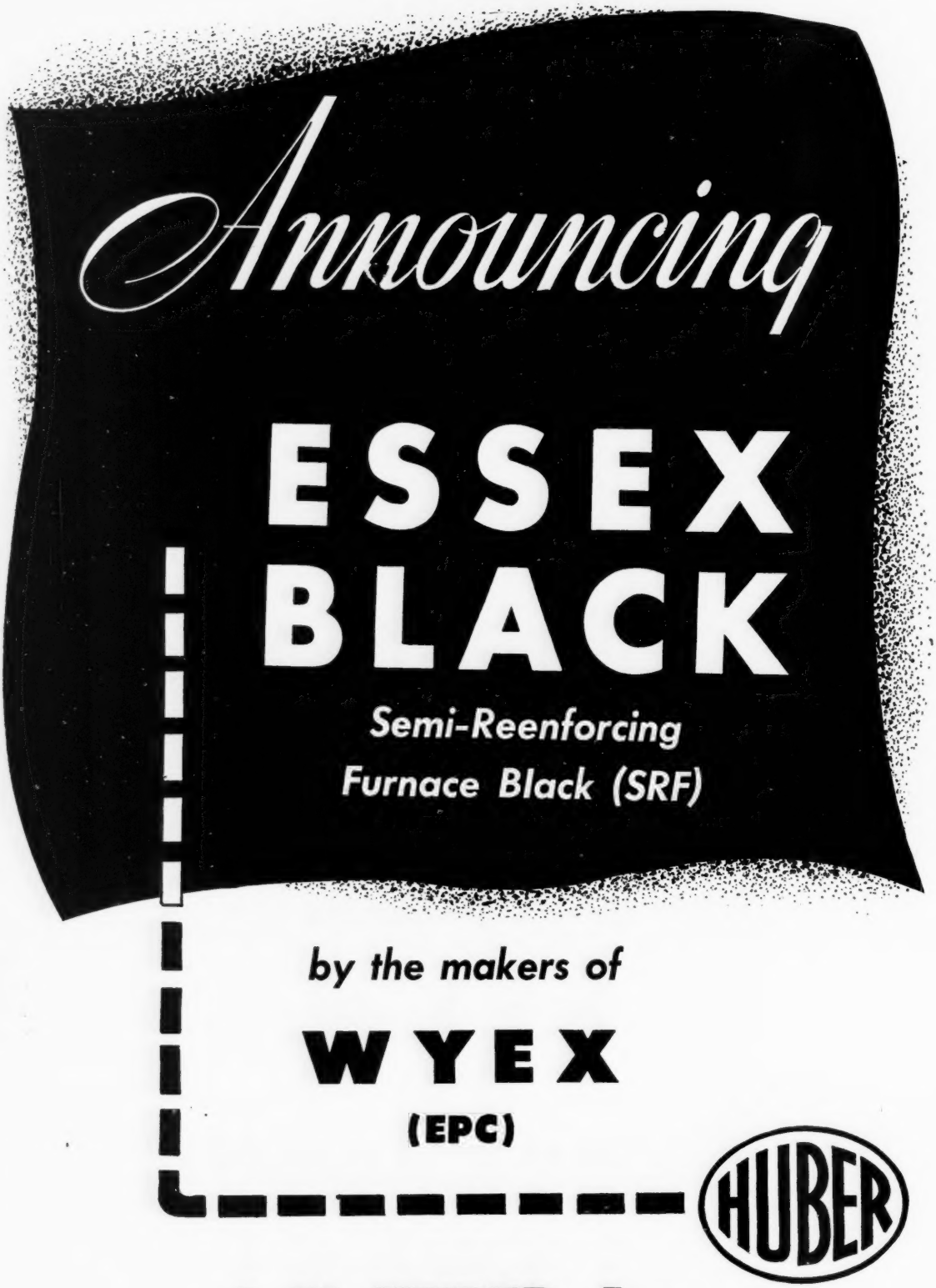
SYNTHETIC RESINS • CHEMICAL COLORS • PHENOLIC PLASTICS • INDUSTRIAL CHEMICALS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ESSEX
BLACK
Semi-Reenforcing
Furnace Black (SRF)
by the makers of
WYEX
(EPC)
HUBER
J. M. HUBER, Inc.
460 West 34th Street
NEW YORK 1, N. Y.

December, 1945

Volume 113 Number 3

A Bill Brothers Publication

INDIA
RUBBER WORLD
NATURAL & SYNTHETIC

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Published monthly by Bill Brothers Publishing Corp., 388 Fourth Ave., New York 16 N. Y. Chairman of Board and Treasurer, Raymond Bill; President and General Manager, Edward Lyman Bill; Vice Presidents, Randolph Brown, B. Brittain Wilson

Subscription price—United States and Mexico, $3.00 per year all other countries, $4.00. Single copies, thirty-five cents. Other Bill publications are: GROCER-GRAPHIC, PREMIUM PRACTICE RUG PROFITS, Soda FOUNTAIN SERVICE, TIRES Service Station, Sales Management.

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INDIA
RUBBER WORLD
NATURAL & SYNTHETIC
Published at 386 Fourth Avenue, New York 16, N. Y.

Volume 113 **New York, December, 1945** **Number 3**

Report of the Director of Rubber Programs, WPB

R. S. Wilson[1] and George M. Tisdale[2]

UNCONDITIONAL surrender of Japan to the Armed Forces of the United Nations in August drastically altered many of the major problems and most of the objectives of the rubber manufacturing industry. Therefore, this report deals with the objectives and problems presented while this country was still at war with Japan and the many changes involved in rapid reconversion to peacetime production, whereby this country will be supplied as quickly as possible with the thousands of articles containing rubber on which our present-day civilian economy is based.

In view of the fact that the War Production Board, having accomplished its mission, is to be succeeded by another government agency—the Civilian Production Administration—it seems proper to include in this report not only the situations that have been dealt with during the past four months, but to incorporate a series of comprehensive charts and a table that will make available in one place statistics which deal with natural rubber consumption and price, synthetic rubbers, reclaimed rubber, and tire production.

July 1 to August 14: V-J Day

Cutback in December Military Truck Tire Program

Following V-E Day, the level of military truck tire requirements was reduced on several occasions. The Rubber Bureau had been adjusting to the level of essential military and civilian requirements. As each adjustment was made, it was studied in relation to the existing and currently authorized new capacity of the industry.

It became apparent that the additional capacity for production of truck tires provided by the December Military Truck Tire Program was not needed in its entirety. While serious shortages in meeting current requirements still existed, particularly in the large-size truck tires, it was clear that, by the time the new plants and expansion would be completed and in production, capacity would far exceed the latest projected requirement level.

A comprehensive study was undertaken, comparing truck tire requirements with existing and potential capacity. It was determined that a reasonable cushion of capacity should be provided over the average level of requirements in order to allow for contingencies. This study indicated that if the new plants under construction and those other expansion projects requiring the longest time to complete and get into full production were eliminated, retaining only those expansion projects that would be completed and in production by the early part of 1946, a cushion of 12% of average requirements would be provided. If all expansions were to be carried to completion, the capacity would be 37% in excess of average requirements. Before final recommendations were made as to which projects should remain in the Program, a very careful check was made of the status of each project. In addition to estimated completion dates, the cost per pound of the scheduled production from each expansion project was considered, and, based upon these two factors, recommendation was made that certain projects should remain in the Program.

On July 18, 1945, the detailed recommendation for reduction in the December Military Truck Tire Program was discussed with representative officials of the War Production Board and the claimant agencies interested in tires. A decision was reached to reduce the program in the amount of 86 million dollars of the initially authorized cost. This change, together with cancellations previously effected prior to July amounting to 24 million dollars of the initial cost, reduced the December Military Truck Tire Program to an initial cost of 22 million dollars from the original 132 million dollars. Estimates made at the time indicated that the net saving of government funds might approximate 55 million dollars.

After these cancellations had been effected, there still remained on a tonnage basis an increase of approximately 32% in total truck tire capacity above the industry's declared capacity as of November, 1944.

The following table presents the statistical picture on a quarterly tonnage basis:

INDUSTRY TRUCK TIRE CAPACITY—QUARTERLY
(Based on 75 work days)
(Unit—Pounds)

Industry—Declared November, 1944	Maximum—All Expansions	Remainder—after July 18 Cancellations	Net Change after July 18 Cancellations
336,000,000	537,000,000	445,000,000	+32%

Complete cancellation of this Program after V-J Day reduced the projected 445-million-pound capacity. However capacity will remain in excess of that declared in November, 1944, because a certain proportion of the expansion will be completed by industry at its own expense.

Conversion of Truck-Tire Capacity to A-3-b Tires (9.00 through 11.00 Cross-Section)

During the discussion and the decision to cut back the December Military Truck Tire Program, it was clearly shown that insufficient unit capacity existed to attain the projected require-

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[2] Assistant director, Rubber Programs.

ment level for A-3-b tires, while for other groups of tires, the capacity exceeded requirements. After the program had been reduced, the Rubber Bureau requested the industry to adjust its existing capacity from smaller tires to A-3-b tires. In addition, the companies, still having expansion projects remaining after the cutback, were requested to make the necessary adjustments so that A-3-b unit production would be possible at the expense of smaller truck tire sizes. This adjustment program was set up just prior to V-J Day, and had it been put into effect, the industry would have had balanced capacity for the production of the various types of tires against the pre-V-J Day level of 1946 requirements.

Expediting of Remaining Projects

After the major cutbacks in the truck tire program were effected, it was possible to readjust the delivery schedules for various types of rubber-processing machinery and equipment so that the potential completion dates for the expansion projects remaining in the program were considerably advanced. The Rubber Bureau continued a close follow-up of the progress of the remaining projects and continually expedited delivery of needed equipment.

Partial Cutback of Rayon Expansion Program and Reduction in the Level of Carbon Black Program

The reduced requirement level for tires, which resulted in the cutback of the tire expansion program, also meant that the rubber industry did not need so much rayon tire cord or so much carbon black as had been previously forecast. Therefore it was possible for the Textiles Bureau to cancel certain rayon expansion projects that had been previously authorized, and for the Chemicals Bureau to do likewise for certain planned carbon black expansions.

Work on Balancing Components and Manpower Continued to V-J Day

While the reduced level of tire requirements alleviated in a large measure some of the critical situations that had previously developed with respect to components, careful review was continued on the current production level of rayon and cotton tire cord, carbon black, chafer fabrics, rosin, and other important components.

During this period, neither tire nor component materials production approached capacity because of manpower shortages and work stoppages.

The War Production Board, in cooperation with the War Manpower Commission, continued its efforts to recruit additional manpower for the tire plants, tire cord mills, reclaimed rubber plants, and other plants producing rubber products. In addition, an effort was maintained to obtain deferment of important workers in industry and to maintain men from the Enlisted Reserve Corps in the tire plants.

After V-J Day

Impact of V-J Day on Industry

Generally speaking, V-J Day found the rubber industry capable of converting quickly from the production of military products to peacetime items. There was no need of basic reconversion of equipment and machinery. However some disruptions occurred, particularly in the plants of the smaller companies due to the sudden termination of military orders. On V-J Day control still existed on the use of various synthetic rubbers and reclaimed rubber. However appeals were granted immediately, permitting companies, whose military orders had been cancelled, to begin production of civilian items made with reclaim or synthetic rubber, except tube-grade Butyl.

Demobilization of Controls on V-J Day

During the first few weeks immediately following V-J Day, it was possible, because of cutbacks in military procurement, to effect the following changes in wartime rubber controls:

(1) The quantitative restrictions on the production of A-5 and A-6 truck tires, farm-implement tires, passenger tires, small truck and passenger tubes, and camelback were immediately revoked. This step meant the industry was permitted to produce unlimited quantities of these items.

(2) Complete revocation of all restrictions on the use of reclaimed rubber and the following synthetic rubbers: GR-S, Neoprene (GR-M) and N-Types. This change meant that the industry could produce any kind of product from reclaimed and these synthetic rubbers. Usage control was maintained on natural rubber, natural rubber latex, chlorinated natural rubber, and Butyl (GR-I).

(3) The supply compared to requirements for farm-implement and tractor tires as well as industrial tires made it possible to notify the Office of Price Administration that rationing of these tires could be discontinued. Also, because of substantial cutbacks in orders for military rubber footwear, it was possible to recommend lifting of rationing of civilian rubber footwear.

(4) Appendix IV to Rubber Order R-1, the Tire Allotment Plan, which for nearly two years was the mechanism for distribution of truck tires for original equipment, military replacement, and civilian replacement, was revoked.

(5) Rubber Order R-1 was completely revised as of September 27, 1945. This confirmed the actions indicated above and also revoked various other controls, such as production restrictions on golf balls, regrooving of tires, regulations on scrap rubber except segregation of tire parts, etc. This revision eliminated several reporting forms and simplified those to be continued. Butyl was permitted in the production of all tubes 6.50 cross-section and larger. Rayon tire cord was permitted in all tires with the exception of passenger, motorcycle, and bicycle. The tire production pattern, which required manufacturers to use their interchangeable facilities and available materials to produce first the larger and more critical size tires, was also revoked, permitting the industry to adjust its productive facilities to meet the civilian demand for the various types and sizes of tires.

Cancellation of Remaining Expansion Program

Immediately following V-J Day, the Rubber Bureau withdrew its sponsorship of all uncompleted federally financed projects for the production of tires, soles and heels, and other rubber products. The recommendation was made, however, that all Reconstruction Finance Corp. plants and facilities producing tires should be continued in operation at least until such time as tire rationing could be lifted. The Bureau also recommended completion of federally financed facilities for washing of natural rubber. To date work has not been started on the washing projects, since a review is being made as to the amounts of unwashed rubber that may be received and which will require washing in this country during 1946.

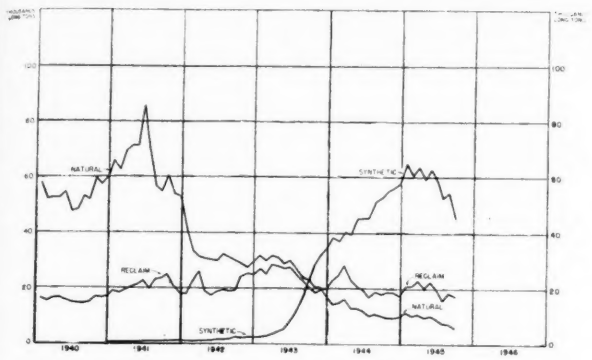
The requirements for rayon tire cord and carbon black, needed to support the peacetime production schedule, were determined and presented to the Textiles and Chemicals Bureaus respectively. These lower requirements for these two basic components permitted the Textiles Bureau and the Chemicals Bureau to withdraw sponsorship from all federally financed projects for the production of high-tenacity rayon.

Peacetime Production Objectives

Tires and Tubes

On August 23, 1945, the Rubber Bureau completed its estimate of tire production on a civilian basis for the fourth quarter 1945 and for the year 1946—Basis VIII. In making this forecast, the Rubber Bureau used a study of civilian replacement requirements that had been prepared during April, 1945, by experts from the rubber industry under auspices of the Rubber Manufacturers Association. This forecast contemplated fulfilling all deferred replacement needs for passenger and truck tires, as defined in the Rubber Manufacturers Association Report, as well as a substantial amount of the estimated inventory deficit by the end of 1946. Original equipment tire requirements were obtained upon the best advice of the Automotive Division, War Production Board, and reasonable quantities were estimated for export and military procurement. Based upon this estimated tire production schedule, forward estimates were made of the requirements for component materials, including natural and synthetic rubbers, reclaimed rubber, rayon and cotton tire cord, carbon black, etc.

The tire manufacturing industry was requested to submit on September 1, 1945, their estimates of 1946 production, by quarter, for purposes of confirming the estimated Basis VIII production schedule. These industry estimates for truck tires, when totaled, were 9% lower on a tonnage basis for the year 1946 than Basis VIII. Because of the close approximation of the estimates of the



Monthly Rubber Consumption in the United States

Rubber Bureau and that of the industry, Basis VIII has been considered as the official schedule for purposes of component material estimates.

Because actual tire production to date has been lower than the Basis VIII forecast for the same period and because it now seems indicated that 1946 production will not be as high as anticipated in Basis VIII, revised estimates have been developed for year 1946.

ESTIMATED PRODUCTION 1946 U. S. A.

Tires	Basis VIII Original 8-23-45	Revised 10-25-45
Truck and Bus	15,381,000	13,770,000
Passenger and Motorcycle	66,000,000	66,060,000
Tractor and Implement	3,275,000	3,803,000
Airplane	211,000	182,000
Industrial	1,952,000	2,102,000
Bicycle	8,000,000	9,114,000

These revised 1946 estimates, with the exception of passenger tires, more closely approximate the industry estimates submitted on September 1, 1945.

At the present time, truck tires and passenger tires are still rationed. Truck and bus tires are rationed in two size categories: namely, large truck tires of 8.25 cross-section and larger and small truck tires of 7.50 cross-section and smaller. The War Production Board and its successor agency, the Civilian Production Administration, being the supply agency for the production of tires, must determine when production of these various categories is sufficient to eliminate rationing safely. The staff of the Rubber Bureau has met on several occasions with representatives of the Office of Price Administration to discuss this subject. Current production is climbing, but has not yet reached the levels previously anticipated. Until production becomes greater, a definite date for ending of rationing cannot be established.

There are certain remaining controls on the production of tires and tubes that will be maintained during the immediate future. Rubber Order R-1 now prohibits the production of white sidewall passenger tires and also makes it illegal to produce more than one grade of truck or passenger tire. The grade now permitted is the so-called "100 level." The basic reason for these two controls is to obtain maximum production by permitting only one specification product to be made. These controls will be revoked immediately upon ending of rationing.

A pending amendment[3] to Rubber Order R-1 permits the use of rayon tire cord in the manufacture of passenger tires of 6.50 and larger cross-section.

At the present time, Butyl may be used only in the manufacture of tubes having a cross-section of 6.50 or larger. Butyl is a highly desirable synthetic for the production of inner tubes. It is possible that this material may replace natural rubber for tubes after all controls are lifted.

The amounts of natural rubber that are permitted in the manufacture of tires and tubes is controlled by Rubber Order R-1. These controls will be maintained and will be relaxed systematically and progressively pursuant to the reconversion policy described below.

It is indicated that most other component materials, other than those described above, are in ample supply to meet the projected tire and tube production schedule for the year 1946. The only possible difficulties that can be foreseen are the small amounts of cotton broad-woven textiles required by the tire industry and the relatively small amount of rosin used in compounding.

U. S. A. PRODUCTION

Year	Truck & Bus Tires	Passenger Car Tires	Tractor & Impl. Tires	Airplane Tires	Camelback Pounds
1939	7,680,000	49,933,000	1,100,000*	33,000	54,411,000*
1940	8,221,000	50,965,000	1,500,000*	75,000	49,488,000*
1941	11,148,000	50,392,000	2,100,000*	170,000	75,920,000*
1942	13,033,000	2,461,000	430,000*	625,000	106,082,000*
1943	12,927,000	7,628,000	914,000*	1,033,000	236,715,000*
1944	14,713,000	18,793,000	2,105,000	1,417,000	353,744,000
1945 Est..	16,600,000	28,200,000	2,600,000	800,000	321,000,000
1946 Est..	13,760,000	66,000,000	3,800,000	182,000	263,000,000

* Shipments.

Other Rubber Products

Generally speaking, there is ample capacity within the industry for the production of all types of rubber products. Many items, manufacturing of which has been prohibited throughout the war, now become important to our peacetime economy. It is also true that many of these items have not been successfully made with synthetic rubber and that, therefore, it is necessary to consider the use of natural rubber in these as well as in those that have been made throughout the war. Many controls, having been removed on plastics, textiles, etc., the rubber industry is faced with the loss of position, if not allowed proper raw material to produce serviceable items. This situation will be given consideration as more rubber becomes available.

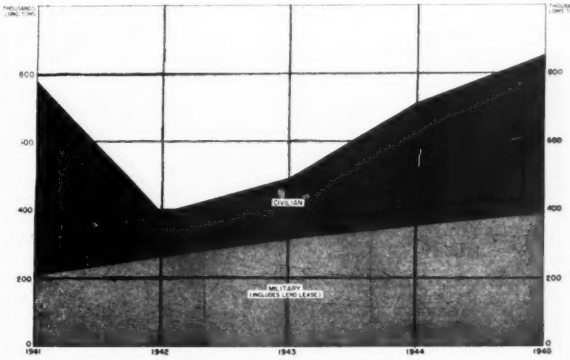
The only remaining controls on production of rubber items, other than tires and tubes, are confined to the amounts of natural rubber and Butyl that can be consumed.

The most serious component shortage in this field of general rubber products that threatens orderly reconversion is cotton broad-woven fabrics, controlled by WPB Order M-317-a. Production of rubber mechanical goods, footwear, coated materials and other items is being curtailed and, in some instances, threatened by the shortages of cotton textiles. The present controls established in Order M-317-a give preference to customers producing bags, to satisfy certain export requirements, and to manufacturers of low-priced clothing. The rubber industry has recommended that the controls established in this order be revoked, permitting equal treatment for all consumers of these cotton fabrics. The Rubber Division of the Civilian Production Administration is preparing factual information on this subject for presentation to the Administrator.

The rubber manufacturing industry, synthetic rubber industry, reclaimed rubber industry are relatively small users of rosin (10-12%). It is recommended that distribution controls over this material be maintained to protect this small requirement until such time as production of rosin has been increased to somewhat near the prewar levels.

Reconversion to Natural Rubber

The policy of the Rubber Bureau and its predecessor agencies in converting from the use of natural to synthetic rubber during the war was based on retaining natural rubber in those products where for quality reasons synthetic rubber could not be substituted. Conversely, synthetic rubber was used first and in the



Yearly Estimate of United States Natural and Synthetic Rubber Consumption—Military vs. Civilian

[3] See p. 404, this issue.

greatest quantities in those products where the end-product quality was adequate when made of synthetic. In reconverting from the use of synthetic to natural rubber, the same basic policy will be followed in reverse. As more natural rubber becomes available, it will be permitted first in those products where for quality reasons it is required. For example, in the field of tires, greater improvement in tire performance can be obtained by using relatively more natural rubber in truck tires than in passenger tires.

Because of the importance of the use of natural rubber for quality reasons in the production of large truck tires and airplane tires during the war, the tire industry on a wartime basis was consuming approximately 90% of all natural rubber permitted. Historically, the consumption of natural rubber for production of tires has been 70-72% of the total amounts consumed. Using the historical pattern of natural rubber consumption which is surprisingly stable, the Rubber Bureau has calculated the percentage of natural rubber that properly applies to each segment of the rubber industry, such as tires and tubes, mechanical goods, wire and cable, footwear, soles and heels, drug sundries, etc. Each segment of the rubber industry will share in the additional supply of natural rubber in the proportion its particular segment bears to the total.

Within each industry segment, the additional rubber will be permitted in those products where it is most needed for quality reasons. In this connection the Rubber Bureau has the advice of approximately 17 technical consulting committees, representing the various industry segments. In consultation with these committees, a preference pattern is being established within each segment indicating the products in which the industry recommends natural rubber should first be used. *Importance of these technical consulting committees cannot be over-emphasized, and it is absolutely essential that they be maintained and permitted to perform the same functions that they have over the past three years.*

This method of reconverting to the use of natural rubber will cover the major-consuming products; but, obviously, will not reach all the many and varied products that might be made with natural rubber. As the process of reconversion continues, the industry will progressively use larger percentages of natural rubber. An appeal policy will be established whereby manufacturers of miscellaneous items which do not fall within the major program will be permitted to consume rubber in the same relative proportion to their prewar use as the major-consuming products.

The Technical Staff of the Rubber Bureau is preparing a pattern for reconversion based upon the above policy, which will lay out the steps that can be progressively taken as soon as additional natural rubber becomes available per month. This pattern will be put into effect immediately upon official advice as to rubber availability.

With regards to rubber availability, it is important that a clear-cut channel be established for orderly flow of information so that advance planning on the use of rubber can be put into effect immediately as rubber actually becomes available. The Rubber Development Corp. of the Reconstruction Finance Corp. has been established as the sole purchasing agent for the United States and through its agents will know when rubber is actually in transit to this country. The Rubber Committee of the Combined Raw Materials Board will be advised of such shipments and will determine rubber allocation as between countries. The allocation decisions of this Committee will be the official source of information upon which the Rubber Division of the Civilian Production Administration will act in amending its controls.

Continuing Rubber Organization

The Director of Rubber Programs has reported to the Chairman of the War Production Board. With the abolition of the War Production Board on November 3, 1945, this office will be discontinued. However, Robert S. Wilson will remain as Advisor to W. L. Batt, Chairman of the Interagency Policy Committee on Rubber. George M. Tisdale, who has been Assistant Director of Rubber Programs, will also remain as Advisor to Mr. Batt and will be Chairman of the Combined Raw Materials Board Rubber Committee, responsible for allocation of natural rubber to all consuming countries.

On V-J Day, August 14, 1945, the Rubber Bureau had 203 employes, 34 of whom were on loan from the industry. Because of the cancellation of the various expansion programs, the revocation of the Tire Allotment Plan and other rubber controls, and the revocation of the overall War Production Board controls, such as the Controlled Materials Plan and certain priority procedures, the Rubber Bureau staff on September 30, 1945, was reduced to 108 persons, 26 of whom were on loan from the industry.

On November 3, 1945, when the Civilian Production Administration replaces the War Production Board, a Rubber Division will be created in the Bureau of Reconversion Operations. The staff of the Rubber Division of the Civilian Production Administration will total 78 persons, 17 of whom will be on loan from the industry. There will be three main organizational units in the Rubber Division. The Technical Operations Branch will be responsible for administering the Rubber Order R-1 controls as they pertain to the use of natural rubber. This Branch will be staffed with technical experts from the industry, who will work with the various consulting technical committees in recommending the pattern of reconversion to the use of natural rubber. A Production Staff will be responsible for maintaining information on production of tires and other rubber products and assisting the industry in overcoming any bottlenecks to orderly reconversion. This group will be responsible also for determination of monthly quotas for tire rationing. The Rubber Supply and Statistics Branch will be responsible for the allocation of natural rubber and will also collect and assemble all statistics regarding natural rubber consumption and tire production.

W. J. Sears, who has been directing the activities of the Rubber Bureau since April 1, 1945, as its Deputy Director, will become Director of the Rubber Division. E. D. Kelly, who has been Assistant Director of the Rubber Bureau in Charge of Staff Operations, will become Deputy Director of the Rubber Division. George L. Allison will be Assistant Director for Technical Operations; Carl Gibson, Assistant Director for Production, and Herbert M. James will be Chief of the Rubber Supply and Statistics Branch.

During the life of the Rubber Bureau of the War Production Board, the Rubber Industry has responded magnificently in furnishing personnel to assist in the government program, has cooperated wholeheartedly in furnishing information and supporting the Rubber Bureau in its operation. As retiring Director of Rubber Programs, I can assure you and the Administrator of the Civilian Production Administration that the rubber industry will continue its splendid record of cooperation and will continue to support the Rubber Division in achieving the objectives of the Civilian Production Administration.

Summary of Impact of War on Rubber Industry and Its Response

All segments of the rubber manufacturing industry deserve the thanks of a grateful nation for a truly tremendous and complex effort during World War II. The combined technical, scientific and engineering ability within the industry rose to the occasion, helping to develop the absolutely necessary synthetic rubber program. Cooperation with similar technicians of the petroleum, chemical, and construction industries made possible a vital new material. In addition, the chemists and physicists of the rubber industry took this new raw material and developed methods by which synthetic rubbers could be made into useful end-products. Production management of the rubber companies was faced with the largest demands ever encountered. Rubber manufacturing facilities were expanded. As these came into production, new manpower had to be found and trained. The cooperation of labor, its long hours of work, its no-strike pledge and in late 1944, seven-day week in the tire and tube industry, were factors that made all-time high production possible. Success or failure to supply the maximum number of necessary rubber products to win the war quickly was dependent basically on the achievements of labor and industry. The fact that our armies have been victorious in Africa, Europe, and the Pacific was brought about at least in part by the tremendous efforts of the rubber manufacturing industry. Although it was necessary to limit the use of almost all rubber products on the homefront and to see that such products as were manufactured went to the most essential uses, the civilian transportation of this country did not break down. There were several pretty close calls, but on each occasion the rubber manufacturing industry put forth greater effort so that there was no serious delay due to a shortage of rubber products.

(*Continued on page* 391)

Application of the Torsional Hysteresis Test to Tires

Helmut Wakeham and Edith Honold[1]

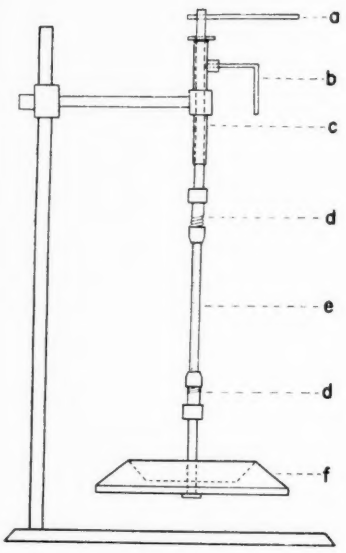


Fig. 1. Torsional Pendulum Arrangement Used in Hysteresis Measurements

a—Rotator
b—Screw Clamp
c—Sleeve Bearing
d—Chucks
e—Sample
f—Pendulum, Marked in Degrees on Periphery

BOTH the rubber and the cord of which a tire is mainly composed exhibit mechanical hysteresis in that, when they are subjected to stress, the energy given out in recovery is less than that spent in deformation of the material. The difference or loss in mechanical energy appears in the form of heat, and the high temperatures observed in tires carrying heavy loads at high speeds are due mainly to the mechanical hysteresis characteristics of the rubber and the cords used in the tires. The present article describes the application of a simple torsional hysteresis test to a study of the hysteresis properties of some tires of known service history.

Apparatus and Procedures

The hysteresis of tire sections was determined by means of the torsional hysteresis test described by Mooney and Gerke.[2] In this method a torsional pendulum is completely supported by the sample which furnishes the restoring torque as the pendulum is rotated.

Some modifications of the Mooney and Gerke apparatus were necessary to adapt it to the purposes of this investigation. The pendulum (See Figure 1), a small aluminum centrifuge head, was 7½ inches in diameter and was graduated around the rim in one-degree intervals. Through the center of the pendulum disk was passed a ¼-inch shaft, 3½ inches long, to which was fitted at its top a chuck for gripping the lower end of the sample. The pendulum, the shaft, and the chuck weighed 1,070 grams. A similar chuck at the upper end of the sample was mounted on a rod supported by a sleeve so that the entire arrangement of pendulum, chuck, and sample hung free and could be rotated by turning the upper rod. The oscillatory rotation of the pendulum was initiated by a sharp turn of the rod, while the tightening of the screw clamp in the sleeve prevented turning of the rod once the oscillatory motion was underway. For measurements at elevated temperatures the whole apparatus was supported in an oven similar to that used by Mooney and Gerke. For room temperature determinations the apparatus was mounted on a table. Accurate control of the initial amplitude was achieved in this case by holding the pendulum stationary while twisting the rod. The clamp was then tightened, and the pendulum released to rotate freely.

The method of Mooney and Gerke for calculating torsional hysteresis from the readings of the oscillating pendulum was followed precisely in this investigation. Angular readings in both clockwise and counterclockwise directions were taken for four complete oscillations. From these the logarithmic decrement of the damped oscillation was calculated by the relation

$$A_n/A_o = 10^{-nK}$$

in which

A_o equals the amplitude of the zero or initial oscillation,
A_n equals the amplitude of the $_n$th oscillation, and
K equals the logarithmic decrement to the base 10.

The relative energy loss per cycle of damped oscillation was found by evaluating the function $1 - 10^{-2K}$. Logarithmic decrement and relative energy loss vary in the same direction. Since the experimental measurement yields first the logarithmic decrement, this value, except where otherwise noted, will be used in this investigation as a measure of the hysteresis of the tire section.

The samples of tire carcass were cut out with a sharp knife or razor blade into the shape of a square rod with the approximate dimensions of 140-millimeter length and six-millimeter square cross-section so that the long axis of the sample was parallel to the large circumference of the tire. (See Figure 2.) These sections were then buffed to uniformity on an emery wheel until the cross-sectional area was between 30 and 40 square millimeters, averaging about 35 square millimeters. The effective length of the sample after insertion into both chucks was approximately 115 millimeters. The carcass sections containing cord were taken from three locations in the tire—sidewall, shoulder, and crown. The all-rubber sections were cut from the tread of the tire.

Some preliminary measurements were made to determine the best dimensions of the sample and to obtain some indication of the accuracy with which the dimensions of the sample must be controlled for comparable and reproduceable results. For a sample of given length it was found that too large a cross-section resulted in excessive damping of the motion of the pendulum; whereas a small cross-section permitted the sample to stretch too much under the weight of the pendulum. A variation of 10% from either the specified length or cross-sectional area, however, had a relatively small effect on the logarithmic decrement, K.

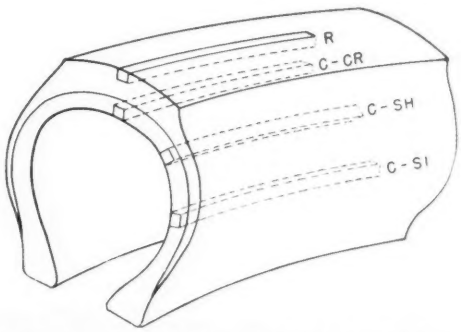


Fig. 2. Positions in the Tire from Which Samples Were Taken for Torsional Hysteresis Measurements

R—Tread Rubber Section
C—Carcass Sections in the Crown (CR), Shoulder (SH), Sidewall (SI).

[1] Southern Regional Research Laboratory, New Orleans, La., one of the laboratories of the Bureau of Agricultural and Industrial Chemistry, Agricultural Research Administration, United States Department of Agriculture.

[2] INDIA RUBBER WORLD, 103, 4, 29 (1941).

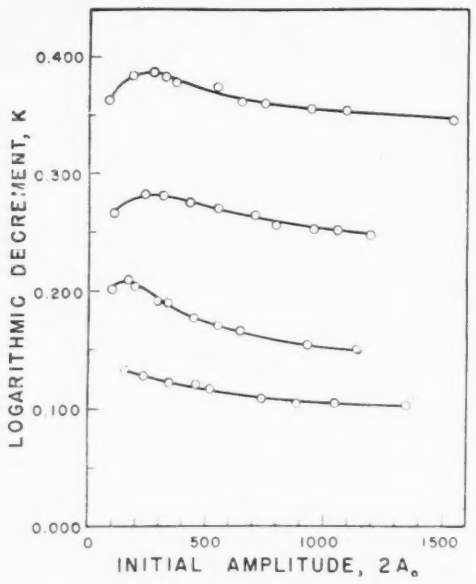


Fig. 3. Logarithmic Decrement versus Amplitude of Initial Oscillation of Pendulum

Experiments showed that the amplitude of the initial cycle of rotation of the pendulum had considerable effect upon the K value obtained. This point is illustrated in Figure 3 in which the logarithmic decrement is plotted against the initial amplitude for a number of tire sections differing widely in their hysteresis values. The choice of initial amplitude to use in any hysteresis comparison must be a compromise between a low amplitude which does not permit an accurate final reading after four oscillations and a high amplitude which requires undesirable distortion of the sample for its production. In this work an initial value of 425-450 degrees for $2A_o$ was chosen. Later when experiments with S-4 test tires were begun, it was found that an initial value of 450 was too low to produce a sufficiently large oscillation at the end of four cycles for accurate calculation of K. Sections were, therefore, measured with $2A_o$ equal to approximately 800 degrees, and this value proved satisfactory for comparative purposes. Furthermore, since it was difficult to reproduce initial amplitudes within less than 25 degrees of any set value, it was deemed desirable to choose a value of $2A_o$ on the right-hand portion of the curves in Figure 3.

Experience showed that prolonged oscillation of the pendulum with one sample tended to raise the value of K; i.e., if the sample is measured a large number of times in rapid sequence, the K for the last few determinations might be somewhat higher than that for the first few. For this reason every effort was made to obtain values of $2A_o$ within the prescribed range during the first seven or ten trials.

The logarithmic decrements herein reported are the average of between three and five determinations on each tire section. Duplicate, and in some cases triplicate, sections were measured for each position of the tire reported.

Experimental Details

Exploratory experiments showed that the hysteresis of a tire carcass section is affected by the moisture content and the temperature of the section. The extent to which the hysteresis may be influenced by these factors is demonstrated in the experiments described below.

The moisture factor was investigated with sections containing cotton and rayon cords. These were soaked in distilled water, weighed, and measured for torsional hysteresis as the sections were exposed to lower and lower humidities; the moisture loss was followed by observation of the decrease in weight of the section. The hysteresis as a function of moisture content in per cent. of dry weight is shown in Figure 4. The dry weight is that obtained after the section has been heated in an oven to 105° C. for 1½ hours and then left in an anhydrous P_2O_5 desiccator overnight. The differences in moisture contents of the cotton and rayon sections shown in Figure 4 are in accord with the differences observed with cords alone.[3] This fact indicates that most of the moisture is absorbed or lost by the cord and that relatively little is taken up or lost by the rubber during the time of this experiment. Since the physical properties of tire cords, along with textiles in general,[4] are greatly influenced by their moisture contents, it is reasonable to expect that the hysteresis properties of the tire section containing cords, and in fact of the tire, are affected by the moisture contents of the tire cords.

Measurements of the hysteresis of various sections were made at elevated temperatures to find the effect of this factor. After the hysteresis of a section had been determined at room conditions the section was transferred to an oven which had been preheated to a desired temperature. The sample was allowed about ten minutes to reach equilibrium in the oven. The hysteresis was again measured, and the section removed while the oven was heated to a higher temperature. This procedure was followed to prevent

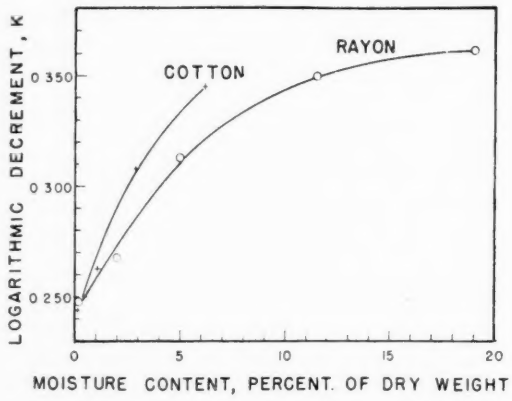


Fig. 4. Effect of Moisture Content on the Logarithmic Decrement of a Cotton and a Rayon Carcass Section. Approximately 40% of the Dry Weight of the Sections Was Cord

unnecessary exposure of the sample to high temperatures since, as will be described below, the hysteresis of the tire section is increased by extended heating. The results shown in Figure 5 (solid curves) depict the temperature effect on hysteresis and illustrate the differences observed for carcass and tread portions of synthetic tires.

A small part of the hysteresis drop with increasing temperature shown in Figure 5 for carcass sections is due to the moisture lost by the cords in the sections while they were exposed to the elevated temperature. The sections were initially conditioned in a room atmosphere and had a fairly low moisture content so that drying the sections before making the measurements at higher temperatures had little effect on the hysteresis curve. By first increasing the moisture of the section, however, the effect of moisture loss on hysteresis during this test could be shown. Carcass section (b) from a cotton cord tire was soaked in water and then allowed to dry off in a room atmosphere before making hysteresis measurements over the temperature range. The resulting curve (Figure 5, b′) shows that the hysteresis increased at room temperature from 0.347 to 0.433 by soaking and that after the tests at elevated temperatures the hysteresis at room temperature dropped to 0.394 owing to the moisture loss during the test.

Prolonged heating of the tire sections was found to increase the hysteresis considerably. Early experiments made on sections at 150° C. showed that heating for three hours had little or no effect on the hysteresis at that temperature. After the sections were allowed to cool and set overnight, however, an appreciable increase in the hysteresis at room temperature was observed. In order to demonstrate this effect, tread and carcass sections were first dried in a vacuum desiccator for 40 hours and measured

[3] J. G. Wiegerink, *J. Research, Natl. Bur. Stds.*, 24, 645 (1940); J. H. Dillon and I. B. Prettyman, *J. Applied Phys.*, 16, 159 (1945).
[4] A. C. Walker, *Textile Research*, 13, 15 (1943).

for their hysteresis. They were then heated in an oven at 150° C. for six hours, allowed to set overnight in a desiccator to keep them dry, and again tested for their hysteresis. The heating and the testing were carried out a second time to determine any further increase in hysteresis which might be observed. The sections were then allowed to pick up moisture during a 40-hour exposure to room atmosphere and measured again. The results, given in Table 1, show that prolonged heating to high temperatures has a permanent effect on the hysteresis of tire sections. This fact probably explains the increase in hysteresis observed with sections from tires tested in a service test in which the tires are subjected to usage which generates high temperatures inside the tire.

Attempts were made to remove or destroy the cord in the tire sections used for hysteresis measurement in order to find out what contribution the presence of the cord makes to the hysteresis of the section. Treatment for several hours with hot 6N hydrochloric acid was found most satisfactory in destroying the cord structure. This method seemed more effective in the sections containing rayon cord than in those containing cotton. In the latter, after acid treatment the space in the section formerly occupied by the cord contained a friable residue which could be broken up by repeated twisting of the section. This was accomplished by spinning the sample in the torsional pendulum a large number of times, making occasional measurements of the hysteresis as the residue in the section was broken up.

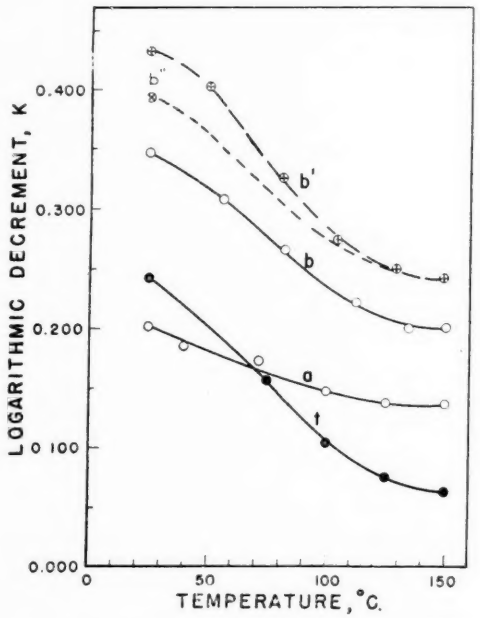


Fig. 5. Effect of Temperature on the Logarithmic Decrement of Tire Sections

t—Tread Rubber
a and b—Body carcass Sections
b'—Carcass Section b after Soaking in Water and Allowing to Dry off at Room Temperature before Measurement
b"—Hysteresis of Section b' after Measurement at Elevated Temperatures

TABLE 1. EFFECT OF HEATING AT 150° C. ON HYSTERESIS OF TIRE CARCASS AND TREAD SECTIONS

Sample Designation*		Logarithmic Decrement, K, at Room Temperature: Before Drying	Desicator Dried	After Heating 6 Hours	After Heating 13 Hours	After Heating and 40-Hour Exposure to Room Atmosphere
Carcass	C-2	354 x 10^{-3}	300 x 10^{-3}	348 x 10^{-3}	389 x 10^{-3}	453 x 10^{-3}
	A-4	305	247	299	312	370
	A-new	236	204	266	276	316
Tread Rubber	B-6	217	212	274	286	303
	D-new	290	280	317	333	349

* See Table 2 for identification of tires from which these samples were taken.

It seemed likely that the hot acid treatment and heating during drying of the sample might also have some effect on the hysteresis of the rubber in the section. Suitable control experiments were, therefore, necessary to insure that the results obtained by decomposition of the cord did not reflect some additional effect as well. The procedure, as finally worked out, follows:

Sections of known hysteresis of tread rubber, carcass containing cotton, and carcass containing rayon cord were handled in three different ways. First, samples of each type were set aside as controls. Second, sections of tread rubber were heated in air to the same temperatures as those attained in the acid treatment. Third, still other sections were treated with the hot hydrochloric acid at 100° C., rinsed, and dried in an oven. After the sections were allowed to set overnight, hysteresis measurements were made as they were taken through more than 50 spinnings in the torsional pendulum. The hysteresis was then plotted against the number of spinnings imposed on the sample. These curves for all three types of sections and treatments are shown in Figure 6.

The results on tread rubber indicate that heating and spinning have little effect on the hysteresis of the section, but that acid treatment increases the hysteresis considerably. This point should be kept in mind when the results on the carcass sections containing cord are considered.

The control cotton and rayon carcass sections increased somewhat in hysteresis with the successive spinnings. This change could be due to some readjustment or reorientation of the short fiber ends in the section as it is twisted and relaxed, or to a change in moisture content of the cords during the test.

The acid treated sections, on the other hand, show a consistent decrease in hysteresis both initially and during the spinning treatment. This decrease occurred despite the fact that the rubber hysteresis increased. Decomposition of the cord, therefore, seems to decrease the hysteresis of the section a considerable amount. A greater effect was observed in the rayon sections than in the cotton, probably because the decomposition or solution of the rayon cord in the acid was more complete.

These results give evidence that the presence of the cord in rubber increases the hysteresis of the section over what it would be if no cord were present. This conclusion seems reasonable in view of the fact that the elasticity and elongation characteristics of the cord differ from those of the rubber. Hysteresis is a mea-

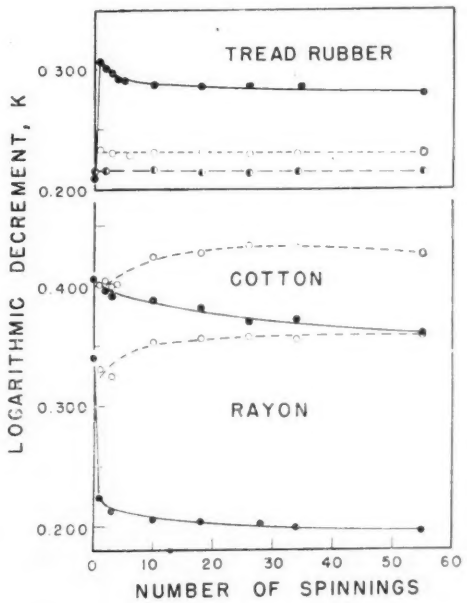


Fig. 6. Logarithmic Decrement of Tire Sections during Flexing Following Acid Treatment. The Values at Zero Number of Spinnings Are the Original Logarithmic Decrements before Treatment

Circles—Control Sections, no Treatment
Half-Filled Circles—Tread Rubber Sections Heated in Air
Filled Circles—Acid Treated Sections

TABLE 2. HYSTERESIS OF TIRES TESTED AT CAMP NORMOYLE, 1943

Code Number	Position in Test*	Mileage	Logarithmic Decrement, K			Average K for Tire	% Energy Loss per Cycle of Flexing	
			Crown	Shoulder	Sidewall		For Tire	Minus New Tire
A-(new)	.....	0	258 x 10^{-3}	257 x 10^{-3}	239 x 10^{-3}	251 x 10^{-3}	68.5	....
A-1	Front	463	284	271	246	267	70.8	2.3
A-2	Front	1005	300	288	262	283	72.8	4.3
A-3	C.O.	154	268	257	249	258	69.5	1.0
A-4	C.O.	4313	303	282	244	276	71.9	3.4
A-5	R.O.	6604	298	275	255	276	71.9	3.4
A-6	R.I.	8321	290	284	244	273	71.6	3.1
A-7	C.I.	11145	305	281	250	278	72.2	3.7
B-(new)	.....	0	293	298	277	289	73.6	....
B-1	Front	1004	320	320	291	311	76.1	2.5
B-2	Front	1114	313	313	292	306	75.6	2.0
B-3	Front	4481	348	332	350	343	79.4	5.8
B-4	C.I.	6719	318	295	272	295	74.3	0.7
B-5	R.O.	7097	334	314	286	311	76.1	2.5
B-6	R.I.	8568	310	304	278	297	74.5	0.9
B-7	C.O.	9720	323	298	269	296	74.4	0.8
C-(new)	.....	0	275	270	280	275	71.8	....
C-1	Front	6314	339	343	325	336	78.7	6.9
C-2	Front	6540	344	350	312	335	78.6	6.8
C-3	C.O.	6731	316	320	266	301	75.0	3.2
C-4	C.I.	8047	326	313	296	312	76.2	4.4
C-5	C.O.	11146	332	320	319	324	77.5	5.7
C-6	R.I.	11435	330	322	280	310	76.0	4.2
C-7	R.O.	14506	341	324	305	323	77.4	5.6
D-(new)	.....	0	256	256	253	255	69.1	....
D-1	Front	5177	319	349	308	325	77.6	8.5
D-2	Front	6117	341	350	304	332	78.3	9.2
D-3	R.I.	7252	314	300	281	298	74.7	5.6
D-4	R.I.	10467	307	291	268	289	73.6	4.5
D-5	C.O.	15470	346	310	278	311	76.1	7.0
D-6	R.O.	17302	324	296	270	297	74.5	5.4
D-7	C.I.	17809	308	316	263	296	74.4	5.3
Overall Averages	Front	3579	323	324	300			
	Center and Rear	9621	315	300	272			

* C.O.—Center outside.
C.I.—Center inside.
R.O.—Rear outside.
R.I.—Rear inside.

TABLE 3. REGIONAL HYSTERESIS VALUES FOR TIRES WITH DIFFERENT CONSTRUCTIONAL FEATURES

Tire	Tread Design	Position on Truck	Logarithmic Decrement, K, of Carcass		
			Crown	Shoulder	Sidewall
E. (Rayon)	Highway	Not known	172 x 10^{-3}	223 x 10^{-3}	110 x 10^{-3}
F. (Cotton)	Highway	Rear	388	415	360
G. (Rayon)	Highway	Rear	323	339	325
H. (Rayon)	Mud and Snow	Front	170	185	285
I. (Rayon)	Mud and Snow	Center	216	275	281
J. (Cotton)	Mud and Snow	Rear	239	237	216
K. Averages for Cotton tires in Groups A, B, C, and D.....	Mud and Snow	Front	325	324	300
		Center and Rear	315	300	272

sure of the recoverability of a distorted section. Since the cord is much less elastic than the rubber, and since its presence displaces rubber from the sample, it is to be expected that the work necessary to restore the distorted section to its former shape, i.e. the hysteresis, will be greater in the section containing cord.

Hysteresis of Service-Tested Tires

Torsional hysteresis measurements were made on 32 S-4, 7.50-20, mud and snow tread truck tires. These tires consisted of four groups all of which were made with the same rubber compositions by the same manufacturer, but which differed in the cotton fabric used in the tire. Seven tires from each group were tested on the U. S. Army Ordnance Normoyle Tire Test Fleet course at San Antonio, Tex. As described by Lemon and Robson,[5] this course was a route consisting of 70% hard surface highway, 15% gravel, and 15% cross-country trails. The tires were all tested at the same time and were run to failure. The mileages recorded for the tires run on the center and the rear positions of the trucks were somewhat higher than those observed for the front tires. This condition was due to the fact that the front tires carried approximately 118% of their rated loads; whereas the center and rear tires carried only about 63% of the rated loads. Furthermore the front tires were subjected to heavier impacts than the other tires, especially in the cross-country portion of the course. The front tires were, therefore, separated from the others in the analysis of the hysteresis data obtained.

For purposes of comparison hysteresis measurements were made on a new tire from each group. These new tires had been plunger tested, but were otherwise undamaged. The sections for hysteresis determination were cut from positions of the tire between the plunger breaks. The results on these new tires, when compared with the tires run on the test course, gave some indication of the change in hysteresis which takes place during service.

Data for these tires are shown in Table 2. The average hysteresis for a tire was arbitrarily taken as the average of the values obtained for the sidewall, shoulder, and crown positions. The per cent. energy lost per cycle of flexing was determined by the formula given above, and the increase in energy loss with service for the tire was found by subtracting the values obtained for the new tire in each group. These results are plotted against mileage in Figures 7 and 8.

Some hysteresis values were also determined for the tread rubber from tires of each group. These results are plotted in Figure 9, in which the change in hysteresis for the tread rubber of a number of different sections is plotted against the mileage of the tire. The values for the treads on the new tires are all approximately the same, as might be expected. As the tires are used, the hysteresis appears to undergo a considerable initial drop and then gradually rises again as more mileage is put on the tire.

[5] INDIA RUBBER WORLD, 109, 463 and 582 (1944).

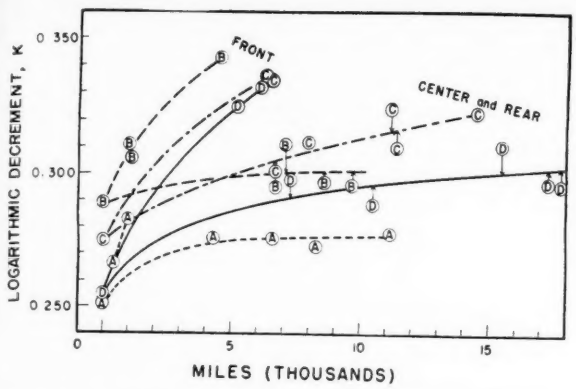


Fig. 7. Effect of Service Mileage on the Logarithmic Decrements of Tires Listed in Table 2

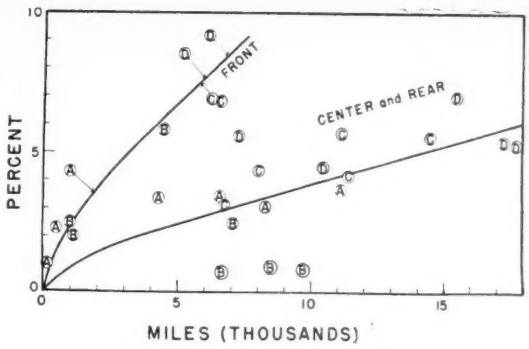


Fig. 8. Effect of Service Mileage on the Increase in % Relative Energy Losses for Used Tires over New Tires Listed in Table 2

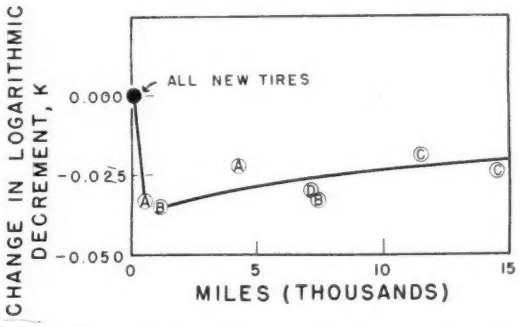


Fig. 9. Effect of Service Mileage on the Change in Logarithmic Decrements of Tire Tread Rubber

Discussion

Although the data herein reported are limited owing to the relatively small number of tires available for test, a number of interesting conclusions seem to be justified.

1. The hysteresis of a tire carcass increases with use. The actual cause of this increase is not certain, but is probably related to the heating and flexing which the carcass undergoes during use. This point is borne out by the fact that the results described in the experimental section above demonstrated that extended heating of carcass sections increased their hysteresis at room temperature. The greatest change in tire hysteresis seems to occur during the early life of the tire unless it is subjected to severe usage, as was the case with the front tires tested in the Normoyle run. In this latter case the hysteresis seemed to increase rapidly until the tire failed.

2. The data in Table 2 show that in a new tire the shoulder, crown, and sidewall have about the same logarithmic decrement, but that as more and more mileage is put on the tire, the differences between the hysteresis of these three regions become appreciable. For the tested tires listed in Table 2 the highest hysteresis seems to be in the crown, the lowest in the sidewall. That this is not always the case, however, is indicated by the data in Table 3. Tires E, F, and G exhibited highest hysteresis in the shoulder, whereas tires H and I were high in the sidewall.

If we assume that the region of greatest hysteresis increase in the tire is also the region of greatest flexing, or heat generation, the data in Tables 2 and 3 give information concerning the effect of tire design on flexing in the tire. Tires E, F, and G have a highway tread design which seems to give more or less uniform flexibility around the cross-sectional circumference of the tire. A consideration of the motion of such an inflated tire would lead one to expect that the point of greatest flexing should be in the shoulder region, and this hypothesis is substantiated by the high hysteresis of the shoulders of these tires. The heavy ribs of the mud and snow tread design, however, appear to reduce the flexing in the shoulder and to distribute it to other points in the tire. In the case of the cotton tires the distribution is such that flexing is more or less uniform throughout the tire cross-section. This uniformity may be due to the fact that the sidewalls of the cotton tires are fairly thick and tend to resist flexing to a considerable extent. In the rayon mud and snow tires the sidewalls are thinner and might be expected to receive more flexing than was the case with the cotton tires. The results of Table 3 bear out this expectation since tires H and I have high hysteresis values in the sidewalls. These facts indicate that tire tread design appears to have a profound effect on the changes in hysteresis in various parts of the tire.

3. A number of facts give evidence that the presence of the cord greatly influences the hysteresis of an otherwise rubber section. The hysteresis of the tread rubber sections measured was in nearly all cases less than that of body carcass sections taken from the same tire. Part of this hysteresis difference may have been related to the differences in rubber composition, but the major part is probably due to the presence of the cord. The experiments in which carcass sections were treated with acid to change the nature of the cords give further indication that the cords, along with textiles in general,[4] are greatly influenced by the tire. Finally, the fact that moisture content of the cord in the carcass section affects the hysteresis of the section shows rather definitely that the cord and its properties are a significant determinant of the carcass hysteresis.

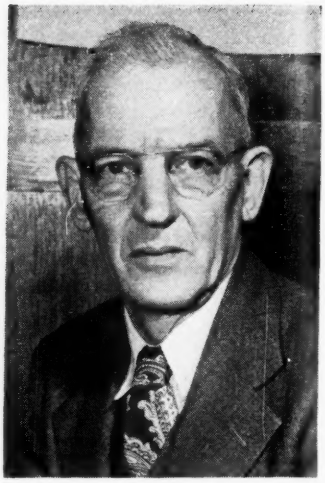
Extension of the foregoing conclusion leads to the possibility that such factors as the nature and the construction of the cord, factors which determine its physical properties, are important contributors to the hysteresis of the tire and, consequently, to the heat generated in the tire during service. This conclusion is substantiated by a comparison of the hysteresis data for tires in Groups B, C, and D. The rubber compositions and manufacturing specifications for these tires were identical. They differed only in the types of cotton cord used in the body of the tire. Yet in spite of this similarity the hysteresis of the new tires in these groups differed from each other, and this difference persisted to some extent throughout the life of the tire. Unfortunately no such comparison could be made between the rayon and cotton tires because of the variations in tire design necessitated by the physical dimensions of the two types of cord.

Summary

The torsional hysteresis test of Mooney and Gerke has been applied to sections cut from tires and permits evaluation of the hysteresis properties of the rubber and cord combination existing in fabricated tires. It has been found that the hysteresis of carcass sections containing the cord are influenced by the moisture content, temperature, and time of heating of the section. Decomposition of the cord in the section with concentrated acid lowered the hysteresis of the section. This gives evidence that the presence of the cord in the section is responsible for the higher hysteresis observed for carcass sections when they are compared to all-rubber samples such as those taken from the tread of the tire. The hysteresis of tires tested on the Normoyle tire test course was found to increase with mileage, and the increase was greater for tires in the front positions than in the center and rear positions on the test trucks. The area of highest hysteresis in a used tire appears to be in the region of greatest flexing and depends upon the tire's tread design and constructional features.

General's Automatic Tire Building Machine

Promises Faster Production, Uniform Product . . . . . .



Walter J. Breth

THE automatic tire building machine developed by Walter J. Breth for the General Tire & Rubber Co., Akron, O., may go down in rubber industry history as one of the factors importantly affecting tire production, ranking with such past developments as the use of organic accelerators, the water cure, the balloon tire.

Hundreds of men still working in tire plants remember when all tires were laboriously built by hand on heavy iron cores, when a score of tires was a full day's production for one man. Production officials usually figure that 180 tires per day (three shifts) by one of the current (pre-Breth) tire building machines is about normal production.

The automatic tire building machine developed by Mr. Breth, five of which are now in use at the General plant, with several more in the process of manufacture, is capable of turning out 720 tires (16-inch size) per three-shift day, General executives state. Simple mathematics shows that this is one tire every two minutes around the clock.

The machine is operated by one builder and one helper, but General's experience is that one helper can serve the builders on several of the machines without hardship.

Essential differences between the Breth machine and other tire building machines is that the turndown, bead setting, turnup, and turnover operations are performed by the machine while the drum is stationary.

Aside from the speed gained in this respect, Mr. Breth says there is a considerable gain in uniformity of product and nearly total elimination of "rejects" and "seconds" stemming back to the human element in the building operations.

Since the cords in the plies run at a diagonal to the axis of the drum, displacement of the cords by the hand tool on the rotating drum of the "past" tire building machine is bound to occur fairly often because of uneven pressure in applying the tool and the difference in angle of the cords on the opposite sides of the drum, Mr. Breth says. Cord displacement and uneven turndown are eliminated by the action of the new machine.

Plans for Further Development and Use

Neither Inventor Breth nor other General Tire executives believe that the new machine is perfect; improvements have continually been made since the installation of the first machine six years ago.

The first models were powered by air cylinders for machine movements; now mechanical application of electric power does the job better and faster. A refinement being made on machines now being built is in the simplification of controls: a single control button will replace the control panel with its array of eight buttons. Amount of wiring and other electric apparatus will be reduced 60%.

The future of the machine as it may apply to the rubber industry as a whole has not yet been decided. Patents on the machine are in Breth's name and assigned to General. Machines now in operation were built for General by the Ferry Machine Co., Kent, O., where several others are now under construction. No decision has yet been made by General's management as to whether the machine will be made available to other tire manufacturers under some form of license agreement.

Construction cost of early machines was high—somewhere between $25,000 and $30,000 for the first machine, but General's development engineers believe that on a production basis this cost might be brought down to about $7,000.

Labor's Viewpoint

Under ordinary circumstances new equipment which decreases

Fig. 1. Builder Applies First Ply to Drum. Recent Improvement in Machine Replaces Control-Button Panel at Builder's Right with Single-Button Control

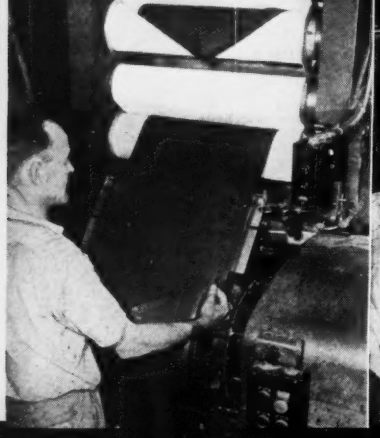
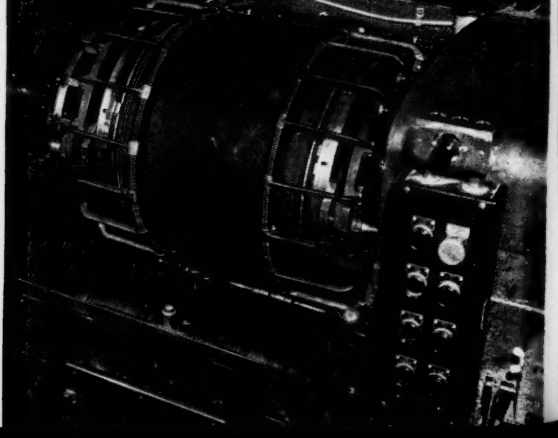


Fig. 2. Builder Applies Second Ply to Drum

Fig. 3. Machine Makes Turndown, Sets Bead, Rolls Flipper, Makes Turnup, and Rolls Turnup. These Operations Are Performed While the Drum Remains Stationary



the manpower necessary to perform an operation is not greeted with smiles by organized labor, but General has had no trouble from that direction. Perhaps the fact that the machine was developed during war years when every effort was being made to step up production has some bearing on the situation.

Union tire builders work on the machines at General and have been doing so for several years. There is no secret about the machine to these men, and it seems likely that the rubber workers' unions have known about its production capacities for some time. No organized opposition has been apparent so far.

Some Details of Operation

The steps performed by the tire builder during the two minutes needed to complete a tire on this machine are detailed by Mr. Breth as follows:

(1) Builder puts beads in the machine.

(2) Builder pushes button #1, which brings housing in, opens core, and heads go into drum.

(3) Builder puts first and second plies on drum, bringing ply ends down from servicer. Electric eye controls ply length.

(4) Builder pushes button #2. Machine automatically makes turndown, sets the beads, rolls the flipper, makes the turnup.

(5) Builder applies the third and fourth plies to the partly-built tire.

(6) Builder applies the chafer and breaker strip.

(7) Builder pushes button #3. Tread is applied, cut to length, spliced, and rolled at low pressure.

(8) Builder pushes button #4. Machine rolls tread under high pressure and makes turndown.

(9) Builder pushes button #5. Tread roller drops, machine makes turnunder, drum collapses, freeing tire.

(10) Operator removes tire from collapsed drum and is ready to repeat the cycle of operations.

Some of these steps are illustrated graphically in the accompanying illustrations.

Inventor Breth points out that in this series of operations there is none that requires any unusual amount of physical strength. He believes that it is possible and practical for a normally strong woman to operate the machine, although General has used only men on the machine thus far.

An automatic machine for truck-tire building has not yet been constructed, but Mr. Breth believes that it can and will be done.

Increasing productivity of a machine by five to six times is a tremendous acceleration of the manufacturing process. General Tire & Rubber Co. executives believe that this new machine will contribute materially to better tires at lower prices for American motorists in the future.

Walter J. Breth

Walter J. Breth, the inventor of this automatic tire building machine, has been with the General Tire & Rubber Co. for 24 years, for many years as a maintenance man and as an experimental engineer for the last six years. In addition to this latest development, Mr. Breth has also built an automatic bead-cutting machine, an automatic tube splicer, and an automatic thread cutter. He started work on the automatic tire building machine in 1939, and after eight months in which he made little progress with the development of a machine that would not infringe on earlier patents and would be a better machine, he conceived the revolutionary idea of making a machine in which the building drum remained stationary instead of revolving, and in 1940 produced his first practical working model.

Notes from Latin America

Argentina is seeking to ease the local tire shortage by the production of tires from synthetic rubber. The first shipment of synthetic rubber, presumably from the United States, as well as other raw materials, arrived here during September.

Available figures give the crude rubber consumption of Bolivia in July, 1945, as 1,281 metric tons. At the same time 204 tons of rubber were exported to the United States and 79 tons to Argentina. Toal exports of crude rubber represented a value of $221,128.

The rubber agreement between the United States Rubber Development Corp. and the Government of Costa Rica has been extended to June 30, 1947. The base price for wild rubber will remain at 33¢ a pound, but the production bonus now paid does not figure in the new agreement and may therefore be discontinued at any time.

During the first quarter of 1945, Costa Rica exported 35.74 long tons of rubber in the form of washed and dried crepe. Local processing firms took an additional 7.5 tons. Most of the rubber came from wild trees, chiefly from the San Juan basin. The balance, 2.5 tons, was produced on the only commercial rubber plantation now in production in the country. It is expected that the output of plantation rubber will increase considerably in a year or two when most of the rubber acreage will have reached the tapping stage.

According to a report from the U. S. Embassy in Cuba, a new factory for the manufacture of canvas-topped rubber-soled shoes started operations in Habana recently.

The output of balata in Surinam during the first half of 1945 was 28,107 kilograms, a decline of 324 kilograms from the total of 29,451 kilograms harvested during the corresponding period of 1944. At the same time it is stated that the number of men in the field is less than half the number employed last year.

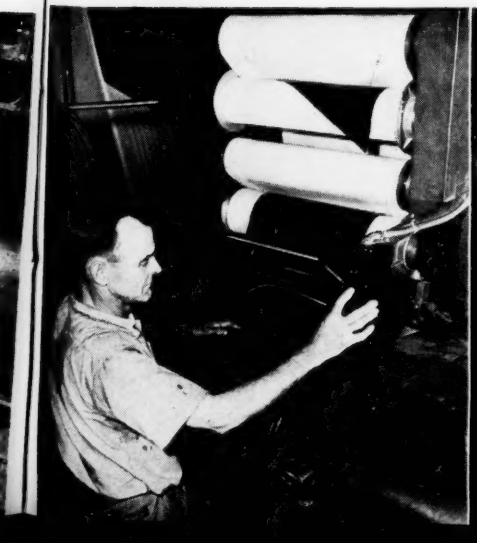


Fig. 4. Pushing Button to Bring Fourth Ply into Place: Third Ply Has Already Been Applied Since the Operations Shown in Fig. 3

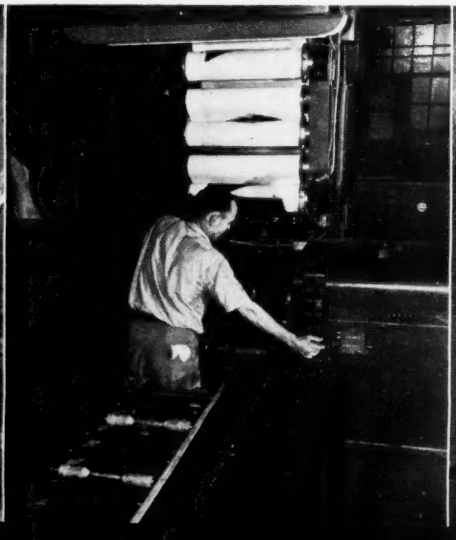


Fig. 5. Chafer, Breaker, and Tread Have Been Applied. Builder Is Pushing Button to Roll Tread under High Pressure

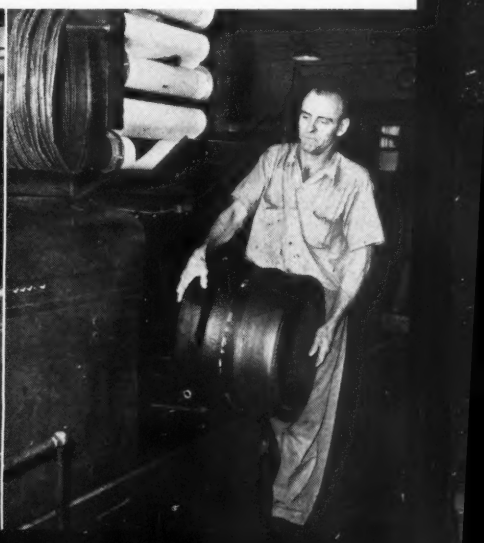
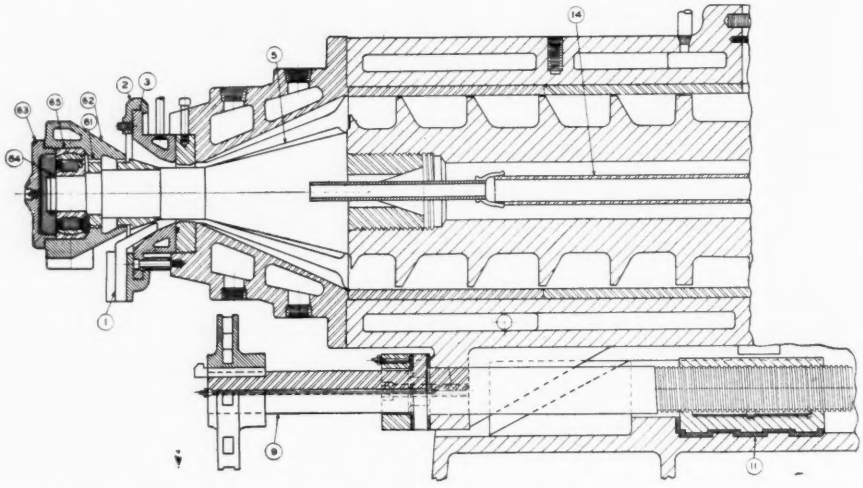


Fig. 6. Builder Removes Tire as Last Step in Operation. Beads for the Next Tire Will Be Placed in Machine Before the Resumption of Operation Shown in Figure 1

Lubrication of Rubber Plant Machinery[1]

A. F. Brewer[2]

Fig. 1a. Gordon 20-Inch Straight-Line Plasticator



Parts List—Gordon 20" Straight Line Plasticator

Part No.	Name of Part
1	Slitting Knife
2	Knife Ring
3	Steam Heated Die
5	Cone
9	Adjusting Screw
11	Adjusting Screw Nut
14	Rotor Pipe Asembly
21	Front Bearing Gland
22	Front Bearing Cover
23	Main Bearing Cap
24	Kingsbury Thrust Brg.
24A	Ring (By Kingsbury)
24B	Bushing (By Kingsbury)
25	Oil Screen Base
26	Oil Screen Cover
27	Oil Screen
28	Bushing Cover
29	Thrust Bearing Dowel
30	Inspection Cover
31	Thrust Bearing Shim
32	Split Ring Key
33	Thrust Bearing Cover
34	Thrust Bearing Gland
35	Dust Cover

Lubrication Chart Gordon 20-Inch Straight Line Plasticator (Figure 1B)

Point No.	No. of Lubricators	Type of Lubricator	Service Period	Parts Lubricated	Point No.
1	1	Oil reservoir	Maintain level between bottom of gage and groove "F")	Kingsbury thrust bearing	1
2	1	Grease cup	One filling when new: Filled automatically from (1) afterward.	Forward radial roller Bearing	2
3	1	Grease cup	Once daily.	Rear radial roller Bearing	3
4	1	Oil reservoir	Maintain level so that gear dips.	Bull gear and pinion	4
5	2	Oil reservoir	Maintain level so that collar dips.	Pinion shaft bearings	5
6	1	Zerk fitting	Once daily.	Outboard bearing	6
7	1	Zerk fitting	One or more times daily.	Adjusting screw thrust collar	7
8	9	Zerk fitting	According to frequency of adjustment.	Cylinders and gibs	8
9	1	Spring grease cup		Adjusting screw and nut	9
10	2	Zerk fitting	Once daily.	Feed cylinder ways	10
11	1	Zerk fitting	Once daily.	Feed cylinder latch	11

THE rubber plant involves an assembly of heavy-duty machinery. From the bale cutters, washers, and crackers which are required for preliminary handling of crude rubber, all the way through the rest of the plant there are machines designed specifically to withstand severe shock loads, high temperatures, and overload service.

Some of the operations require comparatively simple machine assemblies, especially when the stock is subjected to roll treatment. For others, as in mixing, plasticating, and pelletizing, special machinery has been developed which handles the stock more rapidly, more economically, and with greater assurance of stock uniformity by the time it reaches the forming stage.

Automatic Lubrication

The trend toward automatic lubrication in the rubber industry has been activated by the need to reduce dependence on the human element and to promote more effective operation with less maintenance. When bearings are fitted with individual oil or grease cups, regular inspection and refilling are necessary. This brings in the human element. If the attendant is conscientious and educated to the vital need of adequate lubrication, but little difficulty is experienced. If, however, he is careless and misses a grease cup, or if an oil cup runs dry, bearing trouble may result.

The manufacturers have studied this problem, and their solution in the form of automatic lubrication is noteworthy. Centralized grease and oil lubrication has become very popular on the mixer; bath lubrication is standard on the plasticator and extruding machines. The mechanical force feed lubricator is used to excellent advantage elsewhere around the mill, and virtually all of the gear sets are dip, bath, or splash lubricated.

The necessity of cleanliness in the operation of rubber machinery is highly important. It is very essential to prevent petroleum contamination of pigments, or products such as linseed oil, which may be used to soften uncured raw stocks, for petroleum lubricants tend to destroy certain of the desired properties in rubber, particularly if they are allowed to come in contact with the product already compounded. Possibility of dust contamination from the compounds must also be considered.

The Plasticator

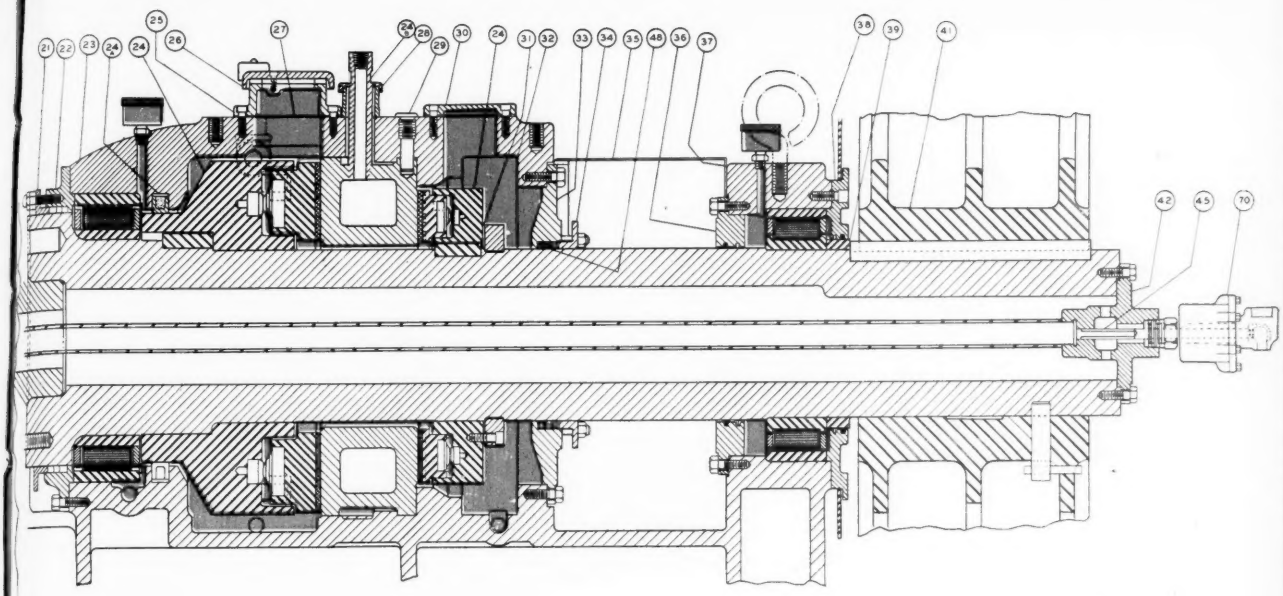
The Gordon plasticator takes the place of roll mills for working raw rubber stock to break it down and improve its plasticity. This must be done to both natural and synthetic stocks. The plasticator consists essentially of a specially designed rotor or screw enclosed in a cylinder equipped with a suitable extruding head and with circuits for heating or cooling of the various parts. Drive is by electric motor through herringbone reduction gears which are fully enclosed and run in an oil bath.

Designing for Lubrication

Roller bearings, a specially designed thrust bearing, and the drive and reduction gears are the salient parts on the plasticator which must be lubricated. The bearing housings have been given special attention by the designers to provide suitable seals which will prevent leakage of lubricant.

Lubrication of the thrust bearing is very important. Here the

[1] Abstracted from *Lubrication*, July, 1945, Texas Co., New York, N. Y.
[2] Technical and research division, Texas Co., New York.



Parts List
(Continued)

Part No.	Name of Part
36	Grease Retaining Ring
37	Rear Bearing Cap
38	Rear Bearing Cover
39	Inner Race Ring
41	Drive Gear
42	Stuffing Box Flange
45	Inner Pipe
47	Front Stuffing Box Packing
48	Thrust Stuffing Box Packing
61	Rear Ring
62	Bearing Housing
63	Housing Cover
64	Snap Ring
65	Bearing MCS5719
70	Flexible Joint

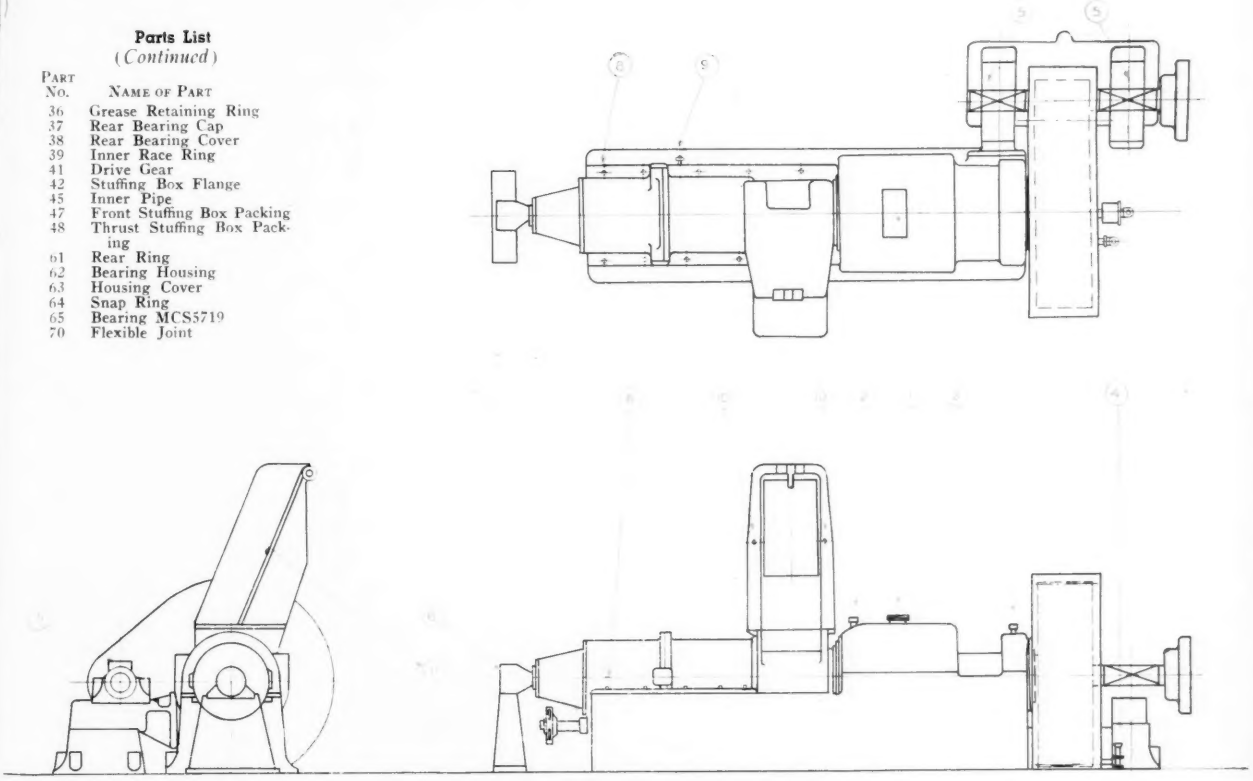


Fig. 1b. Lubrication Chart of Gordon 20-Inch Plasticator

thrust loads developed, as the stock is extruded are absorbed. Lubrication plays an important part in assisting the thrust bearing to take up these loads. Accordingly this bearing (along with the adjacent rotor bearing) is lubricated independently of the other parts.

The lubricant must be comparatively heavy for this service, i.e., having a viscosity of from 150 to 200 seconds Saybolt Universal at 210° F. A compounded oil is recommended by the manufacturer with the thought that the fatty oil component gives the necessary increase in adhesiveness to the lubricating film to carry the loads satisfactorily and reduce wear on the bearing parts. These parts operate continuously in a bath of this oil.

The herringbone reduction gears which are part of the plasticator drive are fully enclosed and run in a bath of oil which provides splash lubrication. These gears are designed for heavy duty. Along with the gear and pinion bearings they are generally lubricated effectually by a well-refined straight mineral oil of from 140 to 165 seconds Saybolt Universal viscosity at 210° F.

Under some operating conditions, however, a mild E.P. type of gear oil as discussed under "Extreme Pressure Lubricants for Gears" is suggested as imparting a greater factor of safety to the lubricating film.

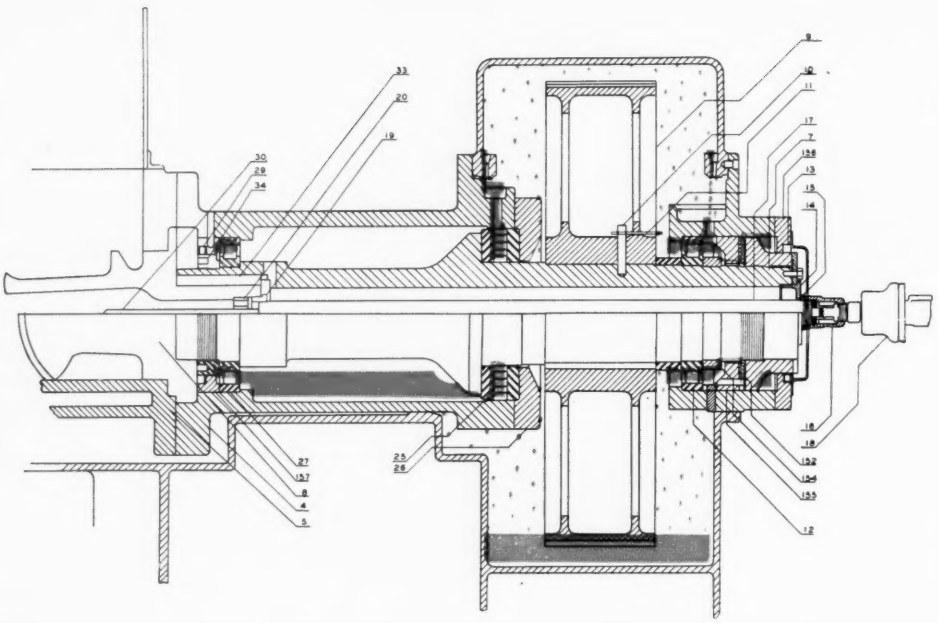


Fig. 2. Pelletizer

PARTS LIST—12-INCH PELLETIZER

PART No.	NAME OF PART
4	Rear Cylinder
5	Hopper Cylinder
7	Drive Spindle
8	Feed Screw
9	Drive Gear
10	Pin
11	Pin
12	End Plate Bearing-Rollway
13	Garlock Oil Seal
14	Pipe Support
15	Pipe Lock
16	Reducing Coupling
17	Outer Pipe
18	Johnson Joint
19	Reducing Bushing
20	Inner Pipe Support
25	Thrust Collar Bearing-Rollway
26	Thrust Bearing Cover
27	Forward Bearing-Rollway
29	Garlock Oil Seal
30	Inner Pipe
33	Key
34	Locknut
152	Thrust Bearing
154	Bearing Lock Ring
155	Thrust Ring
156	End Cover
157	Forward Bearing Collar

Pellet Rubber

Pellet rubber paved the way for automatic handling of rubber stock by conveyers. In the pelletizer, rubber stock is extruded through a suitable perforated head and cut to size by revolving knives.

Lubrication of the pelletizer must be just as carefully considered as lubrication of the plasticator. The operating conditions are very much the same. The loads, however, are somewhat less. The design of the thrust bearing oiling system is interesting. As mentioned in our discussion of the plasticator, it runs in a bath of oil. See Figure 2.[3]

Mixing and Milling

The art of mixing which was perfected for the handling of natural rubber has more recently been extended to synthetic rubber and a wide variety of plastics. In the early days of the rubber industry, mixing was done in open roll mills; then a lot of handling was necessary, and labor, power, and operating costs were comparatively high.

When machinery for internal mixing was developed, the advantages were so outstanding that it virtually revolutionized that operation in the rubber industry. No wonder internal mixing has become so widely adopted. Later when synthetic rubber and plastics were found to be so vital to our war-time activities and industrial needs, the Banbury mixer became even more popular than ever.

Mixer Details

The Banbury mixer consists essentially of an enclosed trough or mixing chamber in which operate two mixing rotors or blades, a hopper into which the materials are fed, and a sliding door in the bottom through which the mixed batch is discharged. The blades of the rotors are formed in an interrupted spiral, and the rotors are operated at slightly different speeds to apply a smearing action between the component particles. Water sprays are installed around the body of the machine for cooling. The rotors also have cooling elements. End-thrust adjustments are provided to absorb the slight axial forces developed by the spiral blades and to prevent stock from working out through the housings. These adjustments are designed for close fitting and follow-up as wear occurs.

A two-speed motor is optional so that the machine can be operated not only at standard speed, but at a somewhat higher speed where desirable. The temperature of working is controlled by the amount of cooling water which is circulated through the cored rotors and sprayed against the side walls.

[3] All illustrations by courtesy of arrel-Birmingham Co., Inc., Ansonia, Conn.

The Operating Mechanisms

The operating mechanisms and parts to be lubricated on a Banbury mixer are shown in detail on the accompanying lubrication guide (Figure 3). Note also the table of recommended procedure. Lubrication is a matter of following this procedure using lubricants of a type which have been proved to be suitable.

Mills

Mills are used for breaking down rubber, grinding rubber and scrap materials, warming stock in preparation for the calender and tubing machine, sheeting from the Banbury mixer, etc. They are also still used for mixing rubber and compounding ingredients, but to a lesser extent since the Banbury mixer came into such universal use.

Slow speeds and heavy pressures prevail in the operation of mills; accordingly the lubricants used for the gears and bearings must be of comparatively heavy body and particularly adapted to take shock loads.

Variations of mills are used as crackers, washers, and refiners. These machines are similar in design to mills, though they vary as to size of the rolls, finish of the roll surfaces, speed, and other characteristics. The rolls are shorter in relation to the diameter, and in crackers and washers one or both are corrugated. Refiner rolls are ground smooth and are of different diameters to increase the surface speed differential. In refiners the rolls are run close together under heavy pressure and at much higher speed to obtain the greatest possible refining action and output.

Heavy-Duty Bearings

In the rubber industry these may be of the plain-sleeve type, or they may be roller bearings. The Banbury mixer, for example, uses plain bearings to carry the journals of the rotors. These bearings are protected by dust stops to prevent leakage of ingredients into the bearings. Dust stops are accessible for adjustment. Automatic lubrication gives added protection to all these parts.

On the plasticator, in contrast, straight roller bearings carry the rotor. Calenders, mills, and other roll machines employ suitably designed sleeve bearings. In brief, the type of bearing has been worked out by the builders based on their experience with actual operating requirements. They approached lubrication in the same manner.

Sleeve Bearing Requirements

Application of a plain or sleeve-type bearing to rubber mill machinery must be studied from several angles: (a) the type of bearing metal; (b) the prevailing loads; (c) the operating temperatures; (d) manner of grooving; (e) means of lubrication.

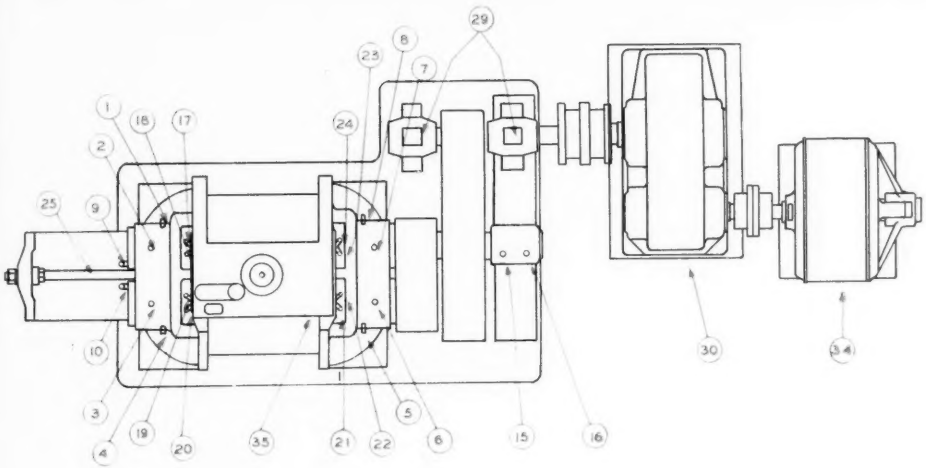


Fig. 3a. Top View of Banbury Mixer

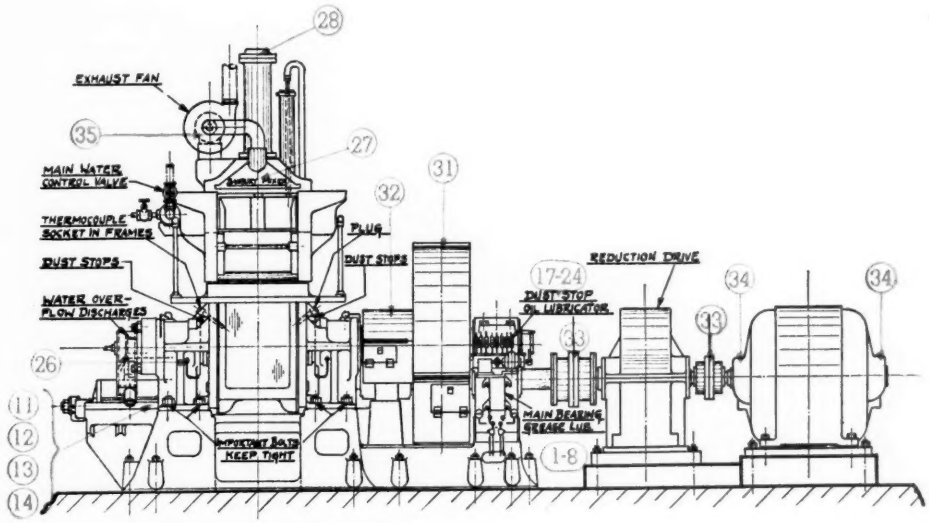


Fig. 3b. Side View of Banbury Mixer

LUBRICATION GUIDE—BANBURY MIXER

PARTS TO BE LUBRICATED	METHOD OF APPLICATION	WHEN TO LUBRICATE	REMARKS
Main bearings #1 to 8 inclusive Thrust collars # 9 and 10 Discharge door rails #11-12-13-14 Drive outboard bearing #15 & 16	Compression grease cup F.F. grease lubricator	Every 2 to 4 hours Periodical intervals Set by timer.	Be sure that fresh grease shows at both ends of brgs. and points applied.
Dust stop rings # 17 to 24 inclusive	Mechanical F.F. lubricator	Periodical intervals Set by stroke of lub.	Be sure oil shows at contact surfaces and keep lub. tank full of oil specified.
Discharge door piston rod #25	Hand oiled	Daily	
Discharge door piston pack'g #26 Leather packing Piston ring	 Hand oiled Hand oiled	 Weekly Weekly	
Floating weight piston rod #27	Hand oiled	Twice daily	
Floating weight piston packing #28 Leather packing	Hand oiled	Weekly	
Drive pinion shaft bearings #29 Pillow block Anti-friction bearings	 Collar-oiling Grease packed	 Daily Every 3 months	Examine periodically and change lubricant if needed.
Reduction gear drive #30 Anti-friction bearings Sleeve bearings	 Splash Splash	 Keep to proper oil gage level	Examine periodically and change lubricant if needed.
Bull gear & pinion #31 Connecting gears #32	Slush pan	Keep oil level so that teeth dip into oil	Examine daily and change lubricant if needed.
Gearflex couplings #33	Bath	Keep proper oil level	Inspect wekely.
Main drive motor bearings #34 Sleeve bearings Anti-Friction bearing	 Ring oiled Grease packed	 Daily Every 3 months	Examine periodically and change lubricant if needed.
Exhaust fan motor bearings #35 Sleeve bearings Anti-Friction bearings	 Ring or Wick Packing Grease Packed	 Daily Every 3 months	Examine periodically and change lubricant if needed.

The first three are relatively stable. The designer has certain bearing metals—babbitts or bronzes—which he can use. He selects these according to his experience with the expected loads and the operating temperatures.

When it comes to grooving, however, there are many different patterns which he can follow. All have their relative merits. Some

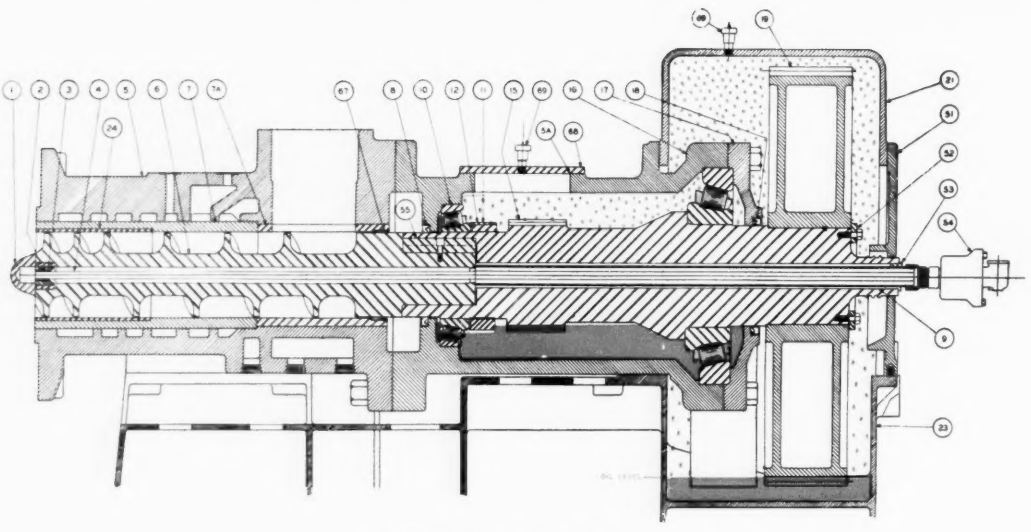


Fig. 4. Ten-Inch Tubing Machine

PARTS LIST—10-INCH TUBING MACHINE

PART NO.	NAME OF PART	PART NO.	NAME OF PART	PART NO.	NAME OF PART
1	Cone	9	Outer Pipe	23	Base
2	Textolite Bushing	10	Timken Cone	24	Cylinder Liner
3	Pipe Support	11	Lock Nut	51	End Plate
4	Rotor Pipe	12	Lock Washer	52	Gear Ring
5	Forward Cylinder	15	Drive Spindle	53	Outer Pipe Support
5A	Rear Cylinder	16	Timken Bearing	54	Johnson Joint
6	Feed Screw	17	Cylinder Head	55	Feed Screw Key
7	Cylinder Liner Forward	18	Klosure Ring	67	Rear Bushing
7A	Cylinder Liner Rear	19	Drive Gear	68	Rear Cylinder Cover
8	Klosure Ring	21	Gear Cover	69	Breather

have definitely bad features. As he is dealing with heavy loads which may be unevenly distributed or applied suddenly as shock loads, he must consider the pressure area of his plain bearings. Here is where these shock loads will cause trouble if there is not sufficient lubrication. Grooving of any plain bearing must be planned so as to lead a continuous supply of lubricant—either grease or oil—to the pressure area. If the grooving leads the lubricant away from the pressure area, starved lubrication will result.

A rotating journal acts as a lubricant pump as it turns in its bearing. Grooving aids definitely in maintaining this pumping action. Amazing as it may seem, very high pressures can be developed in the lubricating system in this manner, sufficient to keep an adequate oil film flowing continually over the high-pressure area of the bearing to prevent metallic contact with the journal, and wear. Pressure build-up in the lubricating film can be accentuated by gradually reducing the depth of the oil groove as it approaches the pressure area.

The Method of Lubrication

Given any sleeve or plain bearing installation, the manner of lubricant application can be varied. Oil cups, grease cups, centralized grease lubrication, splash or bath lubrication are all applicable to rubber mill machinery plain bearings. Pressure grease lubrication is being favored on more recent installations for example, using a centralized system for distribution. This enables re-lubrication under more constant pressure, prevents the possibility of abrasive matter getting in with the grease, and assures that the bearings will be regularly lubricated.

Regular Lubrication Is Most Important

This came to be realized when the rubber industry went into high-speed production and continuous operation. No longer could it afford to rely entirely on the human element. It was too easy to forget to turn down a grease cup, or miss a pressure fitting. Too often when these ran dry, bearing trouble developed, and damage progressed sufficiently before it was noticed, to require cutting the machine out of line for repair.

Regular attention to the lubrication schedule is most important. Every operator and mechanic should be drilled with this thought in mind. Nor does the installation of a centralized lubricating system relieve him of this responsibility. Such a system cannot manufacture lubricant—it must be kept properly filled. The same goes for splash or bath-oiled bearings and gears. An alarm control can be installed to warn when lubrication stops. Then the machine automatically shuts down.

Roller Bearings

The designer of rubber mill machinery does not have to worry about grooving when he is about to apply a roller bearing.

The heavy-duty roller bearing may be built to a number of designs. These include cylindrical, barrel-shaped, tapered, and cylindrical-helical rollers, carried in suitable retainers which keep them in proper position with respect to the inner and outer races.

Contact Area

Alinement is most important in roller bearing operation. The actual contact area of a roller bearing is rectangular. This must be maintained without deviation, for skewing of a roller may throw the entire bearing out of line, to result in uneven load distribution and wear. In other words, the axes of the rollers must be in the same plane as the axis of the rotating shaft. Proper guiding has been found to be the most effective way to keep the rollers from skewing; this is a function of the guide flange. Obviously it becomes more difficult as rollers are increased in ratio of length to diameter.

While one objective is attained, another is aggravated by the sliding motion which is developed between the ends of the rollers and the end plates or race flanges. Here steel-to-steel contact exists, presenting a condition which requires continuous renewal of the lubricating film.

Function of the Lubricant

In roller bearing service the lubricant performs a four-fold duty, viz: (1) It protects the surfaces of the bearing elements against corrosion. (2) It assists the seal in preventing water or dirt from coming into actual contact with the bearing surfaces. (3) It serves as a conductor of heat, to aid in bearing cooling. (4) It functions as a lubricant to enable free rolling of the rollers and sliding between the rubbing surfaces of the shoulders and rollers.

A free-flowing lubricant at the prevailing operating temperatures will most nearly lead to the attainment of these objectives. By this term is meant a grease or oil which will "train" readily with the rollers, yet channel sufficiently so that actual churning does not occur. Excessive churning will build up the torque through internal resistances within the lubricant itself. This frictional effect leads to heat development which may easily build up the bearing temperature beyond the cooling ability of the lubricant, at times even beyond the cooling ability of the external cooling system.

Cleanliness Reduces Bearing Wear

We have spoken of the seal as an adjunct to cleanliness. Obviously, it is important to keep out abrasive foreign matter. But it is also quite as important to use clean, dirt-free lubricants; otherwise the purpose of the seal is offset.

Abrasive particles in a grease, especially, will cause rough rolling of the bearing. When this occurs in a freshly lubricated element, it signifies abrasion. At first this may not be noticeable. But abrasion is going on just the same until, dependent upon the amount of dirt, the speed and the size of the bearing, loose rolling or chattering will develop. At the same time the heat at the contact points may be so high as to assist in oxidation breakdown of the lubricant. Then gums and lacquers form. The only recourse is thorough cleaning, drying, and relubrication of the bearing parts before wear has occurred to such an extent as to require bearing replacement.

Methods of Lubrication

Pressure grease lubrication by positive delivery of measured quantities of grease at periodic intervals has been actively studied, and a variety of systems has been perfected. All have been designed to assure the exclusion of non-lubricating foreign matter, economy of lubricants, minimum hazard in handling and filling and remote control. These advantages prevail in any installation involving heavy-duty roller bearings. The manner in which the pressure is applied, however, will depend upon the type of service and the number of bearings.

Bearings designed for oil lubrication must be equipped with especially prepared seals, the duty of which is to prevent oil loss through leakage, also, to keep out water or contaminating foreign matter. They may be served with measured quantities of oil or provided for oil circulation. Furthermore the bearing housing can be so designed that there is a free flow of oil through the entire elements with but little chance for churning. Finally, continuous reconditioning of the oil supply keeps it in good condition and free from non-lubricating materials which might otherwise affect bearing performance.

Extreme Pressure Lubricants

Lately there has been a decided trend toward favoring E.P. lubricants for rubber machinery gears and certain bearings. The higher speeds and heavier loads on the machines and continuous operation contributed to this trend. Before the advent of the E.P. type of gear lubricants, bull gears of the spur type were lubricated with a well-refined straight mineral oil. The prevalence of shock loading was recognized, but unless loading developed into an overload, straight mineral oils of around the 140 S.A.E. viscosity range (120 to 200 seconds Saybolt Universal at 210° F.) were normally satisfactory. Today, when heavy continuous loads prevail, the mild E.P. type of non-corrosive gear lubricant is favored. This load carrying capacity is highly advisable to take care of shock loads; it is obtained by blending high-quality mineral oils with carefully selected lead soaps in such a manner as to produce compounds of pronounced stability and adhesiveness.

Other Outstanding Characteristics

In addition to load-carrying capacity this type of lubricant has other outstanding characteristics:

1. Performance. It will not lose its extreme pressure characteristics during service.

2. Non-Separation. It does not separate in storage or in service and can be centrifuged without loss of lead soap. Laboratory tests equivalent to 40 passes through a mill centrifuge show no loss in lead compound.

3. Exceptional Adhesive Properties. It is adhesive to gears even if submerged in water.

4. Non-Corrosive. It is not corrosive to steel, copper, bronze, or cadmium-nickel bearings.

5. Good Miscibility. Any heavier grade can be cut back with a lighter grade of the same type of oil if lower viscosity is desired for low temperature service. Mixing should be done around 150° F. outside of the lubricating system if possible.

Calenders

Finishing of rubber begins at the calender. Up to this point the procedure involves working of ingredients to produce a stock suitable for finishing. The calender is a form of rolling mill which takes this stock and reduces it to sheets of desired thickness. Rubber coating of fabrics is another operation performed by the calender.

Heat is necessary to maintain the plasticity of the product. Consequently the calender rolls are steam heated. Considerable pressure also is exerted on the bearings, which means that the bearings may have to be water-cooled; otherwise they might become so hot as to cause the bearing metal to soften.

Temperature control and bearing metal stability present definite problems to the designer. The former is fixed by the temperatures of the steam to be used, the inlet temperature of the cooling water, and the rate of water circulation. Bearing metal stability is dictated by the melting point of the bearing metal (which is a measure of its resistance to heat) and how effectively it can be lubricated.

Older types of calender bearings were lubricated by compression grease cups, grease pockets in the top bearing caps, or by heavy oil. The modern way is to use a mechanical force feed lubricator or provide for flood lubrication of the journal boxes with a circulating pump, oil cooler, and oil sump tank.

The viscosity of the oil required for calender bearings depends upon the journal temperature. Up to 140° F. an oil of from 75 to 125 seconds Saybolt Universal viscosity at 210° F. is suggested. Above this temperature, up to the usual maximum of 350° F., heavier oils are desirable up to a maximum viscosity of 330 seconds at 210° F. For grease-lubricated bearings a heavy-duty grease compounded with a fairly high viscosity straight mineral oil is usual. For the other parts of such machines, follow the builders' lubrication guides as to oil viscosities or types of grease.

The Tubing Machine

In contrast with the calender which rolls out rubber and rubber-coated products in sheet form the tubing machine produces the finished product by extrusion through a die. A variation of this machine is used for refining rubber stock by forcing it through a strainer head.

Splash or bath lubrication is incorporated in most of these machines today. The same gear lubricant used on similar gears elsewhere in the plant may also be used here. The shaft bearings are normally of the anti-friction type. They are usually oil-bath lubricated. A compounded heavy bodied (steam cylinder type) oil of from 140 to 165 S.S.U. viscosity at 210° F. is desirable for the spindle radial bearings and the thrust bearing.

Soviet's Home-Grown Rubber

Russia evidently intends to continue and even to expand work on the production of home-grown rubber. Recent press reports from Moscow claim that the outputs of *kok-saghyz* rubber on the collective farms in the Ukraine are expected to be almost equal to those obtained from *Hevea brasiliensis*. It is not explained whether the comparison is with the yield of ordinary *Hevea* or of budgrafts or clonal seedlings.

The development of *kok-saghyz* plantations has not been accomplished without some difficulty. The earlier plantings did not give uniformly good results; on the contrary, plants would flourish on some plots, yet perish on others in the same area. Eventually it was discovered that by planting *kok-saghyz* seed on wasteland under conditions approximating as closely as possible those of the native habitat of the plant, 100% success could be insured, while the rubber-roots would be heavier.

The cultivation of *kok-saghyz* is becoming throughly mechanized, it is claimed. Extensions planned for next spring are to be made with the aid of specially designed machines for use in all necessary operations, from sowing the seed to harvesting the rubber.

Recent Russian Literature on Natural and Synthetic Rubber—XVIII

M. Hoseh

AN INVESTIGATION of the Uniformity of Polydiene Rubber. A. I. Opalev, K. F. Kalushenina, S. B. Gorfunkel, V. P. Mineeva, "Kauchuk i Rezina," 4/5, 38-41 (1940). **S-46.**

Polydiene rubber, a mixture of rodless polymers and a certain quantity of liquid polydienes, is widely used in the tire industry. Many complaints were made by the tire plants about the lack of uniformity in the behavior of this product. To elucidate the reasons and to remove the causes of such variations, experimental batches were prepared and tested.

The various batches were of two kinds: SK polymers from different plants were mixed with polydienes of one kind; and SK polymer from one plant was combined with polydienes from different plants and of different viscosity. The properties of the polymers and of the polydienes are tabulated. The nature of the experimental batches was tested by using them in carcass stock, in rubberizing cord, building 7.00-16 tires and testing these on a tire running machine. All the operations involved were according to the accepted plant routine.

The experimental results showed that of the various polymers tested the best was the one produced at the plant SK-2. This polymer is produced in horizontal polymerization chambers. The least satisfactory results were obtained with polymer of plant SK-4. The respective characteristics of these polymers were: plasticity, 0.30 and 0.29; breaking strength 154 and 123 kg. per sq. cm.; relative elongation, 637 and 589%; residual elongation, 33%, for SK-4 not given. Of the polydienes tested, those of higher viscosity gave better results all around than those of lower viscosity. The tested viscosities were: polydienes from plant SK-2, 6.23 and 32.4 centipoises; from plant SK-3, 7.3 and 14.9 centipoises; from plant SK-4, 6.6 and 23.0 centipoises. To improve the properties of polydiene rubber, the viscosity of the polydiene used should be not less than 30 and not more than 40 centipoises. The tensile strength of the vulcanizate should not be lower than 120 kg. per sq. cm. (1,706 lbs. per sq. in.).

Oxidation of Synthetic Rubbers. I. A. Volzhinkii and L. A. Loginova, "Kauchuk i Rezina," 4/5, 41-47 (1940). **S-47.**

The purpose of this investigation was to study the oxidation process of Na-butadiene rubber and the effect of some salts on the rate of oxidation. The objects studied were: (a) butadiene polymers having plasticities of 0.3 and 0.6, respectively, and not freed of impurities; (b) "divinol" obtained from 25% divinyl (no explanation is given what "divinol" actually is); and (c) a butadiene rubber of 0.34 plasticity into which was incorporated 2% of Cu, Mn, or Co oleate, respectively. The set-up used in this investigation resembled closely that of Kemp.[1]

The butadiene polymer was finely comminuted and was exposed to pure O_2 for 282 hours both at room temperature and at 100° C. The experiment was conducted out of light. During this period and under the stated conditions no absorption of oxygen by the polymer could be observed. It remained soft and elastic and lost none of its basic properties. The liquid "divinol" did oxidize to a considerable extent. Its plasticity and solubility in standard rubber solvents were lowered. Some oxygen was found to have been absorbed. It is likely that the absorbed oxygen is present as peroxide. The butadiene specimens containing the metal oleates reacted strongly with oxygen. Analyses showed 10-15% of absorbed oxygen. The rubber disintegrated and lost its inherent properties. It turned into a hard crumbling product not amenable to milling. A 5% solution in CCl_4 of a butadiene polymer having a plasticity of 0.6 was exposed to pure O_2 at —5 to —10° C. for 242 hours. At the end of this period the solvent was driven off; the residue was dried to constant weight and tested. No changes could be observed to have taken place.

Shrinkproof Rubber for Stamped Overshoes (Galoshes). N. S. Il'in, L. S. Usyskina, and A. G. Panasyuk, "Kauchuk i Rezina," 4/5, 48-51 (1940). **S-48.**

Stamping overshoes has advantages over other production methods in that it raises the output, improves the product both in strength and uniformity, requires less floor space, and reduces waste and the consumption of raw materials (textile and benzene). However this method of production required a rubber that does not change its thickness when worked on a calender. This investigation had as its object producing such a rubber mix for vamps and for soles. Therefore shrinkage of vamp rubber was studied under the effect of: nature and quantity of filler, nature and quality of plasticizer, plasticity of SK, method of preparation of SK, method and temperature of compounding.

The experimental results showed that the filler most effective in reducing shrinkage is lamp black. For the same plasticity of SK an increased amount of lamp black incorporated into the mix reduces the shrinkage of the sheet. Partial replacement of lamp black by other fillers in equivalent volumes increases shrinkage. All types and amounts of plasticizer reduce shrinkage. As the plasticity of SK increases, the quantity and the kind of filler being the same, shrinkage decreases. The rest of the ingredients being the same, mixes with rodless polymers shrink more than those containing rod polymers. As the working temperature (calender, extruder) increases, the degree of shrinkage decreases.

Recipes for overshoe soles are made with reclaim stock. Therefore it was important to study the effect of regenerated rubber on shrinkage. Incorporating reclaim into the stock increases shrinkage; as the quantity of reclaim in the recipe increases, the shrinkage increases. Increasing the content of lamp black, while the reclaim content is kept constant, lowers the degree of shrinkage. Raising the content of plasticizer, while the reclaim and the lamp black content remain the same, also cuts shrinkage.

Reclaim of 100% SK is preferable to NK-SK reclaim. Reclaim stock of 100% SK prepared according to NIEIRP (Scientific Research and Experimental Institute of the Rubber Industry) gave a practically shrinkless sheet. Among the various fillers tested was also boghead. While it was effective in reducing shrinkage, it affected adversely the mechanical properties of the vulcanized product.

Calculation of Carbon Black Production. S. M. Karpacheva, "Kauchuk i Rezina," 4/5, 52-59 (1940). **M-22.**

An outline of calculating the processes involved in the production of carbon black is given. The outline contains the material and heat balances as well as an illustrative example of calculation.

Ways of Solving the Problem of Reclaiming Na Divinyl Rubber. B. Ya. Osipovkii and B. V. Mamontov, "Kauchuk i Rezina," 4/5, 61-67 (1940). **S-49.**

The term "regeneration" as applied to rubber is frequently misused. Quite frequently this term is applied to the reuse of old rubber. Thus the process of grinding old rubber and mixing it with plasticizers for reuse is often referred to as "regeneration." More correctly, this term should be reserved for the process of reconverting the rubber substance of old rubber to a product closely resembling raw rubber and endowed with its properties, i.e., plastictiy, ability to blend with the usual compounding ingredients and response to vulcanization. If these properties be imparted to old rubber by some purely mechanical means, then the process involved is rather recovery than regeneration. Which of these processes should be the aim of industrial utilization of old rubber depends on the yield and desirability of the final prod-

[1] Cf. *Ind. Eng. Chem.*, 23, 1444 (1931).

uct. In this particular case the most desirable product is one which can at least partly replace new rubber even in rubber goods of the most exacting specifications.

Experience with NK showed that the most desirable reclaim is one prepared by inducing deep-seated changes in old rubber. The same holds true for SK. It is known that reclaim obtained by thermal swelling is inferior to one obtained by solution. Unlike NK, heating does not plastify SK. On the contrary, upon heating, SK becomes stiffer; its strength increases in many cases, and relative elongation decreases. If the heating of SK is carried out in the presence of oxygen, these changes are more pronounced. Nor does mechanical treatment improve the plasticity of SK. Indeed, unless precautions are taken to carry away the heat, mechanical handling will stiffen rather than plastify SK. The results from the point of view of reclamation are worse when mechanical treatment is carried out in the presence of acids or alkalis as is the case in alkaline or acid reclamation. However the picture changes when heat is applied not directly to SK, but to SK previously swelled in organic solvents. Thermal treatment of SK in the presence of an organic solvent is for the present the most effective method for reclaiming SK. The presence of oxygen (air) seems to enhance the process.

There are two methods of thermal reclamation of SK in the presence of organic solvents. In the first case, reclamation is carried out in the presence of relatively small volumes of solvent, and the solvent remains in the reclaimed rubber. In the second, reclamation is carried out in the presence of relatively large volumes of solvent, and the solvent is recovered at the end of the process. The first method includes such processes as the acid, the alkali, and the thermal swelling methods of reclamation. The second method is essentially solution. The solution method is the best known at present. As now practiced, this solution method has many points which need improvement. One of these is the removal of fabric. At present bits of fabric are floated away from the rubber solution. Flotation, although effective, has many drawbacks. One of these is the sensitivity of flotation to the nature of the solution. The composition of the rubber solution depends on the solute and the method of preparing the solution. Thus, when the nature of the starting material, i.e., the rubber to be reclaimed, changes, the flotation method may have to be changed.

A new way of removing the fabric was tried out on a laboratory scale. Comminuted rubber was soaked in a mixture of solvent and water. It was thus kept for several hours with constant stirring. The mixture now containing swollen rubber is transferred to a special cell where the fabric is removed. The remaining rubber is then treated to dissolve it. The absence of fabric permits carrying out dissolution at temperatures above 150° C., which greatly speeds up the entire process. Another problem encountered in the solution method of reclamation is that the dissolution of the rubber is not complete. This fact does not permit complete recovery of the solvent, nor is the rubber completely degraded, i.e., degraded to an extent where it is comparable with a solution-reclaim of NK. Since the solvents commonly used are unsaturated compounds, a certain amount of polymerization is induced by heat. The polymerization products remain in the reclaim on which they exert a plastifying effect, thus partly compensating the incompleteness of the degradation. Preliminary laboratory investigations show that complete degradation of SK is possible and that the solvent polymerization products are not required with this reclaim, thus removing the necessity of using unsaturated solvents. The use of saturated compounds as solvents will bring many technological and economical advantages.

(*To be continued*)

Report of Rubber Director

(*Continued from page 376*)

Conclusion

Now that our arms are victorious over our enemies, the rubber manufacturing industry is faced with new responsibilities. Tires, tubes, and thousands of other rubber products must be produced to supply a nation that has been starved of rubber goods. There is a tremendous pent-up demand for products made of rubber for civilian transportation, industrial use, and household consumption. These demands will keep even the greatly expanded facilities of the rubber manufacturing industry busy for many months to come.

A summary review of rubber during the war period will show:

(1) Ninety per cent. of our natural rubber supply was cut off in February, 1942.

(2) We had on hand or afloat at that time approximately 650,000 tons of natural rubber.

(3) This stockpile, conserved by stringent measures, gave us two years in which to develop a substitute for natural rubber.

(4) In those two years an entirely new source of supply of rubber was created—the American synthetic rubber industry—capable of producing 1,200,000 tons of synthetic rubber annually.

(5) In 1941, America's rubber products were made of 99% natural rubber and 1% synthetic rubber; in 1945, America's rubber products were made of 15% natural rubber and 85% synthetic.

(6) In the third year after the loss of Singapore, our total rubber consumption (natural and synthetic) rose to a peak higher than any previous year in our history.

(7) While the synthetic rubber polymer is not in all respects the equal of natural rubber as yet, it did the job and did it well.

(8) Broadly speaking, no vehicle, military or essential civilian, stood still for lack of tires, and no military operation was delayed because rubber equipment was lacking.

These simple, unembellished facts tell more strikingly than pages of comment and statistics how America rose to overcome the most frightening industrial aspect of the sudden Japanese attack.

Great credit must be given to the Rubber Survey Committee (Messrs. Baruch, Conant and Compton) for having stressed the essentiality of rubber and for having pointed the way by which this nation could achieve the development of an adequate supply of rubber.

Today we are faced with the problem of meshing our new synthetic rubber industry with new supplies of Far East plantation rubber which will be available in the months ahead. This is one of the momentous problems that confront the nation. Development of the groundwork for deciding these problems is in the good hands of the Interagency Policy Committee on Rubber established by the Office of War Mobilization and Reconversion.

November 3, 1945.

Use of Synthetic Rubber Up

Conversion to the production of camelback and tires for peacetime purposes is now nearing completion at the Port Elizabeth tire factory of the Firestone company. Synthetic rubber is to be largely used for the retreading material and ordinary tires, and by the end of the year a certain amount of synthetic rubber is also to be used in the manufacture of giant tires.

South African tire manufacturers are reportedly turning more and more to synthetic rubber because of the difficulty of obtaining natural rubber. However it has been suggested that even when more natural rubber becomes available, South Africa will continue to use a considerable proportion of synthetic rubber. At present the changeover to this rubber is said to be slowing up local production because of the more prolonged processing required.

Liberia in August, 1945, exported 1,443,084 pounds of crude rubber to the United States.

The creation of a new Scientific Research Council to coordinate research and training of workers is now under consideration in the Union of South Africa. Through proper coordination of scientific research and the careful training of workers it is intended to raise the standard of research work on the country's natural resources and on behalf of industry.

The Eureka Co. of South Africa, Ltd., with a registered capital of £150,000 in preference shares of £1 and ordinary shares of 5s. each, recently offered for public subscription 52,000 ordinary shares at 6s.3d. and 10,000 preference shares at 22s. per share, to finance the acquisition of the Eureka Rubber Co. (North), Ltd., which the first-named company's expansion plans require.

EDITORIALS

Who Will Make the New National Labor Policy?

WHEN the Ball, Burton, Hatch Federal Labor Relations Bill was first presented to Congress a few months ago, it was pointed out in this column that the attitude of organized labor in the rubber industry was such as to emphasize the need of a new national labor policy and of a means of insuring the peaceful settlement of labor and management disputes if this country was going to make the necessary rapid progress in its reconversion effort after the war ended. It was also pointed out that if new legislation was needed in order to prevent the "knock-down, dragout, finish fight" between management and labor, considered possible by the authors of this bill, then the Ball, Burton, Hatch Bill seemed to have much in its favor.

V-J day has come and gone, and we have been plunged into the new problems of the postwar period almost overnight. Government controls over industrial production, in most instances, have been removed quite rapidly, and as far as the rubber industry is concerned, reconversion to the production of products for the peacetime market has been made with very little difficulty; *with one important exception*, production is much below capacity because of a continuing shortage of manpower, aggravated by the workers' refusal in many plants to work more than a six-hour day or to work much in excess of thirty or forty hours a week. At the same time, production output is further reduced or threatened with reduction by the possibility of a wave of strikes growing out of organized labor's demand, in the rubber as well as other industries, for a 30% increase in the hourly wage rate. Strangely enough, labor's position on this matter has, in general, been uncompromising, since labor's leaders have insisted that the 30% increase is essential to the economic stability of the country because it would maintain purchasing power, prevent inflation, and assure a high level of industrial production. The fallacy of this argument is that purchasing power in excess is available, but the consumer goods still are not.

Management in most industries has taken the position that a 30% increase in the hourly wage rate cannot be granted without a considerable increase in price ceilings, although some smaller percentage wage increase might be possible in accordance with the procedures outlined by President Truman in his October 30 broadcast on wages and prices, if a corresponding small increase in prices was approved. Labor, in turn, has taken the attitude that the smaller increases are inadequate and has called for strike votes under the Smith-Connally Act to emphasize their demand for increases more nearly approaching the 30% figure.

The President's Labor-Management Conference, which was called in order to give representatives of labor and management an opportunity to review objectively proposals for the betterment of industrial relations and to provide recommendations for an improved national labor relations policy, has indicated that there is not much common ground for agreement on many of the most important issues. Congress, which had agreed to suspend action on new labor legislation during the conference, is showing signs of becoming impatient, and two ill-advised bills, HR 3937, amending the War Labor Disputes Act, and HR 37, the Anti-Racketeering Bill, have recently been passed on by the House Rules Committee for consideration by the full House, despite Administration opposition.

Meanwhile, in Akron, O., for the second time in about six months, the local URWA unions at the Goodyear and the Firestone company plants have petitioned the NLRB for a strike vote. Management officials at both of these companies have asked the NLRB to deny the local unions' requests because at the present time they see no reason for a strike vote under the Smith-Connally Act. In fact, both of these companies have stated that they will not cooperate in any way with what is termed an "illegal" strike vote. On a country-wide basis for all industries, it is understood that the NLRB in Washington late in November had on hand 792 petitions for strike votes, an all-time record.

Obviously, a new and different national labor policy is needed without further delay. Naturally it would be better if, from the general principles outlined as a result of the President's Labor-Management Conference, individual companies and unions throughout all industry could negotiate and agree on satisfactory contracts and thus eliminate the danger of an increasing number of strikes, but this action does not seem very likely.

Unless management and labor can settle their differences, locally, by company, or by industry, during the next few weeks or months, legislation by the federal government to handle management-labor disputes and in many cases by compulsory arbitration will undoubtedly be enacted. Compulsory arbitration is not desired by either management or labor, but neither is a "knock-down, dragout fight" at this time, wanted by either the general public or the federal government.

Holiday Greetings

AS WE enjoy this first peacetime holiday season in five years, INDIA RUBBER WORLD and its staff want to take this occasion to wish its readers a Very Merry Christmas and a Happy and Prosperous New Year.

Although as we approach this first complete postwar year, the problems of reconversion to peacetime activities seem as numerous and as difficult as the problems of the war years, we should not forget that a nation which accomplished so many near-miracles in its efforts for war will, without doubt, also achieve equally significant results in its efforts in peace.

Scientific and Technical Activities

Kirkpatrick Receives Medal

THE Chemical Industry Medal for 1945 was presented to Sidney D. Kirkpatrick, editor of *Chemical and Metallurgical Engineering*, at a presentation dinner and joint meeting of the American Section of the Society of Chemical Industry, the American Chemical Society, and the American Institute of Chemical Engineers, held at the Hotel Commodore in New York, N. Y., November 9. The meeting was presided over by the chairman of the American Section, Francis J. Curtis.

Howard C. Parmelee, editor emeritus of the *Engineering and Mining Journal*, revealed "The Personal Side of the Medalist"; Albert E. Marshall, president of the Rumford Chemical Works, spoke on "The Professional Side of the Medalist"; and Norman A. Shepard, past chairman of the American Section and chemical director of the American Cyanamid Co., presented the medal to Mr. Kirkpatrick for his "leadership, executive competence, and for his contributions to the advancement of chemical engineering and research."

Mr. Kirkpatrick in his acceptance address on the subject of "Science *versus* Politics" stressed the importance of the science of human relations in solving the problems of the present-day world. Citing a gradual change in the attitudes of scientists and politicians toward each other's objectives, the medalist declared:

"The same atomic bombs that had such decisive effect in speeding the Japanese capitulation also have brought up for decision a problem that has long been worrying the lawmakers and politicians: namely, how to provide national recognition and federal support for science and research.

"Some wag has said that with the release of atomic energy, the scientists want to become politicians, and the politicians, scientists. On their record to date, the scientists have been none too successful with their political proposals, while the politicians seem to have increasing difficulty in organizing their facts—scientific and otherwise.

"This is no time for idle talk that might revive and intensify the traditional conflict between scientist and politician. Rather, there must be more intimate knowledge and sympathetic understanding on both sides.

"Some of the leaders in Congress have been tremendously impressed with what has been accomplished under war stimulus in a great coordinated undertaking where there was literally no limit on funds and facilities. Projecting this program into the future, they see vast possibilities for social and economic gains, provided the research is 'properly guided' and the resulting inventions 'controlled in the public interest.'

"Scientists in general are suspicious of the politicians. They distrust their motives. They see regimentation and political domination in almost any proposal for coordination and control. They see veiled efforts for reforming the patent system and other social objectives hidden in seemingly innocuous provisions in the pending legislation. They have little patience with the political machinations and log-rolling that seem an inescapable part of the law-making process.

"The politician, on the other hand, has even more difficulty in trying to understand the scientist. He may respect him for his scientific achievements, but he still thinks of the scientist as an impractical dreamer, out of all contact with the world in which he lives. The politician clings to this ancient concept despite the fact that the vision, courage, and practical foresight of the scientists in this war contributed so greatly to our strength and security as a nation."

Suggesting that scientists may have been as remiss as the politicians in the past in that the former failed to recognize and cultivate phases of the science of human relations, Mr. Kirkpatrick concluded:

"As would be expected at the end of a war in which science has played such a stellar role, there is a tremendous nation-wide appreciation of the importance of research. Science and engineering are not only at their all-time peak of performance, but enjoy their greatest public acceptance. Recognizing this situation, it is our golden opportunity to help in shaping legislation that will contribute most to the public good."

Smithers and Kinn Talk Before New York Group

THE second fall meeting of the New York Rubber Group was held at the Building Trades Club, 2 Park Ave., New York, N. Y., on November 2, at which time Verne L. Smithers, of Smithers Laboratories, Akron, O., and also head of the recently formed Industry Inventions, Inc., talked on "The Application of High Frequencies to Heating and Vulcanizing Rubber." T. P. Kinn, Westinghouse Electric Corp., Baltimore, Md., supplemented Mr. Smithers' talk with a somewhat more detailed discussion of the theoretical aspects of electronic heating and showed illustrations of various types of equipment used and some typical rubber company installations. After dinner, the Group was entertained by a talk by "Sunshine Gene" Flack, director of advertising of the Loose-Wiles Biscuit Co., whose repertoire of stories and comments on the problems of manufacturing and selling under wartime conditions was much enjoyed.

Mr. Smithers in his talk first described some of the basic principles of high-frequency heating and then presented laboratory results obtained with pure gum smoked sheet vulcanizates, when cured with high-frequency dielectric heating, as compared with the usual steam-heated press method. In addition to the very much increased speed of vulcanization, the greater uniformity of the tensile strength, modulus, and elongation of the vulcanizates from the exterior to the interior of the samples was emphasized. The value of this new method of heating and vulcanizing in decreasing the time of cure of foam sponge mattresses was reported, and an illustration of a large production unit for this work was shown. Also in a conventional molding operation, a 200-watt unit has increased the output of the press by 500%. Experimental work is now under way in connection with the application of high-frequency current for the curing of tires, and progress is being made, Mr. Smithers said. Throughout his talk, this speaker stressed the point that the use of high-frequency heating in the rubber industry should result in as much progress in manufacturing methods as the advent of the use of organic accelerators some 20 years ago.

Mr. Kinn went into considerable detail regarding the mechanism of high-frequency heating and described the difference between dielectric and inductive heating. He then devoted the major portion of his address to showing examples of the use of high-frequency dielectric heating in the rubber, plastics, and other industries, where this type of heating had its greatest application. He also explained applications of high-frequency inductive heating not generally useful in the rubber and plastics industries, but ideally adapted to the metal working industries.

Members of the Group were reminded by Chairman Harry E. Outcault, who presided and introduced the speakers, that the Christmas Party will be held this year on December 14 at the McAlpin Hotel and will be restricted to paid-up members only. Accommodations for 500 persons have been arranged for, but since membership of the Group now totals about 730 persons, the necessity of restricting attendance at the Christmas Party to members is obvious.

Silicones Discussed at Chicago

AT A meeting of the Chicago Rubber Group held in the Morrison Hotel, Chicago, Ill., November 9, R. W. Kolderman, of Dow Corning Corp., talked on "Silicones—New Engineering Materials." John P. Coe, general manager of the Naugatuck Chemical Division of the United States Rubber Co., also delivered an impromptu talk on the future of synthetic rubber. About 150 members and guests were present at this meeting.

Mr. Kolderman reviewed the history of research work on silicon chemistry, mentioning the efforts of Alfred Stock and F. S. Kipping during the period from 1900 to 1930. He then described the work of J. F. Hyde, of Corning Glass Works, who in the early 1930's, synthesized the first flexible, thermosetting silicone polymer. The development, properties, and uses of DC 993, an insulating varnish for bonding and impregnating glass cloth, mica, and asbestos, were next explained. Following Dr. Hyde's work, the study of inert liquid silicone polymers was assigned to the Technical Glass Fellowship, under the direction of R. R. McGregor at Mellon Institute, where a whole family of fluids, which became the first of the silicones to be produced on a commercial scale, were developed.

By varying the degree of polymerization, a heat stable silicone rubber known as Silastic has been developed. Unlike natural rubber, this silicone rubber remains flexible at —70° and serviceable at 500° F., Mr. Kolderman pointed out. Silastic is available in two general types: SR stocks for extruding or compression molding, and SC stocks for coating fabrics and resistor coils or for fabricating Silastic products reenforced with fabrics of metal, glass, or asbestos.

SR stocks are furnished as sheeted crepes; SC stocks as heavy solvent-free dopes having the consistency of a heavy ointment. All Silastic stocks are characterized by retention of elasticity at extremely high and low temperatures, by excellent dielectric properties and moisture

resistance. Intensive research work is still being done on Silastic, and recently new formulations have been developed which have markedly better tensile strength and elongation. Shore durometer, A scale, of these new Silastic stocks ranges from 40 to 65; tensile strength from 280 to 500 p.s.i.; elongation from 150 to 260%; power factor (10^6 c.p.s.) from 0.10 to 0.12 with dielectric strength of about 500 volts per mil.

Largest present uses for Silastic are insulation for leads to electric furnaces, ovens, motors, and household appliances; gaskets for high-temperature equipment; and as a coating for conveyer belts made of glass cloth, Mr. Kolderman said. He emphasized that Silastic, the newest of the silicone products, has gone far since it first became available in commercial quantities less than a year ago. Like the other silicones, it enables engineers and designers to revise old concepts of the properties of materials and to take advantage of an increase in permissible operating temperatures of about 100° C., the speaker said in conclusion.

The next meeting of the Chicago Group, at the Terrace Casino, Hotel Morrison, December 21, will be devoted to entertainment and dancing, for it will be the annual Christmas party and Ladies Night fete.

The group prize contest committee announced that at the January meeting the prize winners of the contest for the best methods of utilization of synthetic rubber scrap and reclaim will be named, and the first three of the winning papers presented.

L. A. Group Nominations

THE second fall meeting of The Los Angeles Rubber Group, Inc., was held November 6 at the Hotel Mayfair, Los Angeles, Calif. F. M. McMillan, of Shell Development Co., addressed the technical session on "Methyl Pentadiene Polymers and Copolymers with Butadiene," and Arthur Ponsford, assistant editor of the *Pacific Fisherman*, entertained after dinner with exciting yarns of deep-sea fishing. R. E. Hutchinson, Firestone Tire & Rubber Co., chairman of the Group, presided at the meeting, and Clifford A. Neville, United States Rubber Co., introduced Dr. McMillan.

Most of the significant parts of the talk by Dr. McMillan were reported in last month's issue in the account of the Northern California Rubber Group meeting of September 27, at which time the same subject was discussed before that West Coast Group. However certain additional facts revealed at the Los Angeles Group meeting will be mentioned to supplement the previous report. Methyl pentadiene is produced by chemical synthesis from refinery gases and is potentially available in large quantities at a reasonable cost. The synthesis of the monomer was developed by the Shell companies, but it is expected that its conversion either alone or with other dienes, to rubbery polymers will be carried out by rubber manufacturing companies, which have polymerization equipment.

The most interesting properties of the methyl pentadiene polymers are their excellent tack, smooth processing characteristics, and exceptional age resistance. In addition to use in adhesives and as blending agents with other rubbers, these polymers are expected to be of interest for the production of coated and laminated articles, i.e., in spreading doughs, friction stocks, skim coatings, etc.; in wire coating and other extruded goods; and in special molded goods, where good processing and mold flow and good heat and age resistance are required.

Nominations of officers for the Group for the coming year, to be voted on by mail, were announced at the meeting. A. L. Pickard, Braun Corp., chairman of the nominating committee, placed the following names on the ballot: For chairman, C. M. Reinke, Reinke, Hiller & Amende; associate chairman, C. R. Wolter, United States Rubber Co., Synthetic Division; vice chairman; P. W. Drew, Goodyear Tire & Rubber Co.; treasurer, P. R. Wineman, B. F. Goodrich Co.; secretary, H. Carroll Walker, Kirkhill Rubber Co.

Nominations for directors, of whom three will be elected to the board, were: R. L. Short, Kirkhill Rubber; E. L. Royal, H. M. Royal, Inc.; E. F. Tomkins, U. S. Rubber, Synthetic Division; C. H. Churchill, B. E. Dougherty Co.; P. D. Radford, West American Rubber Co.; D. C. Maddy, Hycar Chemical Co.; G. C. Dohm, U. S. Industrial Chemical, Inc.; C. A. Neville, U. S. Rubber Co.; and C. L. Fetzner, Monsanto Chemical Co.

R. I. Rubber Club Meeting

A MEETING of the Rhode Island Rubber Club was held at the Crown Hotel in Providence, R. I., on November 16 with about 80 members and guests in attendance. No technical session was included in this meeting, but following dinner the audience was enjoyably entertained by Murl Daniels, a make-up artist, who made some interesting changes in the physiognomy of some of the members, resulting in their transformation into such well-known comic strip and radio characters as Mortimer Snerd.

The only business transacted at the meeting was the election of officers for the coming year. Sherman I. Strickhouser, United States Rubber Co., was elected chairman, and H. W. Greenup, Tygron Latex Products, secretary-treasurer for 1946. The new executive committee is composed of F. S. Bartlett, U. S. Rubber; H. T. Fulton, Kleistone Rubber Co.; Scott Lake, Respro, Inc.; M. J. Linn, Xylos Rubber Co.; H. E. Murch, Goodyear Footwear Co.; J. M. Scott, Scott Testers, Inc.; F. H. Springer, Davol Rubber Co.; and L. T. Wilson, American Wringer Co.

New Scrap Rubber Specifications

THE Rubber Reclaimers Association, Inc., has issued "Specifications for Scrap Rubber," as revised September 21, 1945. Copies of these new specifications may be obtained from the Association by addressing C. T. Jansen, secretary-treasurer, 10 E. 40th St., New York 16, N. Y.

The new specifications, as compared with those last issued June 1, 1944, reflect the current situation in the composition of available scrap rubber in that all the major grades, such as passenger tires, truck tires, and tire parts, include separate classifications for natural and synthetic rubber. Of particular significance also is paragraph 8 which states that the presence of synthetic rubber and natural rubber mixed in a shipment constitutes an improper delivery and renders the shipment subject to the provisions of paragraph 12 (rejections) unless these specifications allow the mixture or the purchase order of the buyer specifically provides for it.

Laminates Discussed at Detroit

THE second fall meeting of the Detroit Rubber & Plastics Group, Inc., was held October 30 at the Detroit-Leland Hotel, Detroit, Mich. A paper on "Progress in the Development of Laminates" was presented by Harry Kline, manager and technical director, phenolic plastics division, Reichhold Chemicals, Inc., Detroit. This talk was followed by the sound-color movie "The Story of Formica," courtesy of the Formica Corp. Samples of molded laminates supplied by Formica, Reichhold Chemicals, Fabricon Products, Inc., and the plastics laboratory of Wayne University were exhibited.

Mr. Kline traced the history of laminate production from the introduction of Bakelite in 1910, until 1944 when 120 million pounds of phenolic molding materials and 96 million pounds of laminating varnishes were produced. The laminating process, it was explained, consists essentially of passing the fibrous material through a bath of resin in solvent, followed by oven drying to remove solvent and to control flow properties of the resin. Layers of the dried and cut materials are molded by various methods at elevated temperatures and pressures. Development of impregnating machines, presses, and resins were described, with a discussion of resin limitations.

Raw materials for resins and fillers were considered with regard to the ultimate physical and chemical properties obtained. Use of substitutes for phenol shows promise in improved properties and rate of cure. Paper laminates were compared with canvas laminates, wherein the former are superior in electrical properties, lower in cost, but inferior in impact strength in the edgewise direction. Paper-plywood combinations join good properties, such as water resistance and good tensile of paper, with good impact strength of plywood. This advantage has opened a new field of structural and decorative materials, it was pointed out.

Recent developments include (1) low-pressure molding resins, (2) high tensile papers, (3) molded laminates using (a) platens and (b) bag method in the hat-type press or autoclave, (4) post-forming of cured laminates using heat and pressure, and (5) fast curing resins and improvements in low-pressure phenolic resins. Molding methods and types of articles molded were illustrated by slides. This paper will be published in a future issue of INDIA RUBBER WORLD.

The December meeting of the Group will be the Christmas party, to be held on December 14 at the Detroit-Leland Hotel. The speaker for the evening will be Webster N. Jones, director of the College of Engineering, Carnegie Institute of Technology, who will talk on the various aspects of engineering education as related to industry. Officers for 1946 will be elected at this meeting.

Boston Group Party December 21

CONTRARY to previously published announcements, the Christmas party of the Boston Rubber Group will be held on December 21 instead of December 7, as originally stated. The place will be the Copley Plaza Hotel. The speaker for this meeting will be W. E. Kavenagh, of the Windsor Mfg. Co., Windsor, Vt., who will report on "Germany by Jeep." In addition there will be the annual election of officers and a Christmas entertainment.

Plastics Technology

The Application of Plastics to Peacetime Usages[1]

R. P. Dinsmore[2]

THE diversification of fabricating materials is an index to the advancement of civilization. As long as these materials are limited to the vegetable products or the minerals which occur naturally, the versatility of the structures that can be fabricated is limited. Wood and stone have severe limitations which are greatly relieved by the availability of iron, steel, copper, glass, plaster, and concrete.

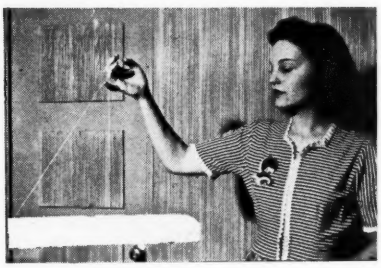
Modern plastics serve to add to the diversification of fabricating materials. They spring from an old family of materials, but are now becoming so diversified, within the family, as to represent an important factor in themselves.

Plastics must have workability under some readily obtainable conditions, with subsequent stability of shape. Probably one of the earliest plastics used by men was wet clay which could be readily shaped and then hardened by heat from fire or from the sun. Celluloid was one of the earliest synthetic plastics of the heat-softening type; while Bakelite, which came along much later, was the earliest of the synthetic plastics of the thermosetting or heat-hardening type. In recent years the number of plastics have expanded tremendously.

It is difficult to get an accurate and simple classification of the synthetic plastics. Actually, unless one is a chemist, interested in plastics manufacture, it is not highly essential to keep a very detailed picture in mind. There is a very large number of trade names for the plastics, and, to the prospective user, a table of properties is more useful than the chemistry of manufacture. However it is of interest to know that a very large proportion of the plastics are or may be derived from coal. Here are a few examples of the sequence of major raw materials: (1) coal tar to benzol to *polystyrene;* (2) coke (and lime) to acetylene to *vinyl resins;* (3) coke (and lime) to acetylene to acetic acid to *acrylate resins;* (4) coal tar to benzol (and naphthalene) to *alkyd resins;* (5) coal tar acids (and formaldehyde) to the *Bakelites;* (6) formaldehyde and urea to *urea resins.*

There are other important resins such as the cellulose derivatives—cellulose nitrate and cellulose acetate—and the rubber derivatives such as the chloride, the hydrochloride, and the isomers. We should also give specific mention to the various series of resins derived from the materials which have been used in synthetic rubbers during the war. These materials are butadiene, styrene, and acrylonitrile, and from them will come many of the new and useful plastics of the next few years. There are others which I will not confuse you by mentioning.

I have attempted to cover just enough of the synthetic plastics to convince you that the field is large and complicated. The possible application of these plastics is very wide and enters into almost every industry of any importance. It would be foolish to attempt to give a comprehensive discussion of these applications. One can imagine Charles Goodyear regaling his friends for hours regarding the possible applications of vulcanized rubber. Certainly an even more extensive list could be made with the plastics today, because of the greatly increased diversification of industrial demands as compared to those of a century ago.



Pliofilm Block. 19 by 2 by 5¼ Inches. Weighs Only 1⅛ Ounces

For our discussion today we must narrow down the field considerably. To do this, I would like to select one or two of the rapidly developing fields of application and discuss those in somewhat greater detail. This will not be so exciting as talking about plastic automobiles and airplanes and highly colored plastic houses, but it will give you a somewhat more realistic view of a portion of the plastics industry.

In the twenty years or so preceding the war, the greatest commercial development in plastics was in the Bakelite type. This, of course, was the hard, inextensible, molded type—just as opaque and not much more glamorous than hard rubber. In later years the Bakelites were supplemented by the urea formaldehydes—translucent and capable of brighter colorings, but still hard and inextensible. Then came the bright, transparent types such as the polystyrenes and the methyl methacrylates. Those permitted brilliant colors and transparencies. It began to look as though the ultimate requirement for a plastic was an optically brilliant, tough, but glass-hard material.

Meanwhile, however, the du Pont company by two of its brilliant developments had pointed the way for new industrial advances. I refer to cellophane and Duco. Cellophane, a regenerated (purified) cellulose, if not a true plastic, at least had plastic properties, when suitably plasticized. It was a strong, brilliantly clear, transparent film and gained tremendous acceptance as a wrapping material. Duco has a nitrocellulose plastic as a base and provided the first important advance in automobile finishes, bright, sun-fast, and flexible. The stage was now set for a new series of plastics: namely, those which had extensibility and flexibility as well as attractive coloring or transparency. The vinyl resins were important members of this new group, which came along before the war; likewise cellulose acetate, and butyrate, ethyl cellulose and rubber hydrochloride.

Plastics and Packaging

It is about these flexible plastics that I would particularly like to talk to you today, and especially their application to the field of packaging materials. Before going into the subject of materials for packaging, I would like to dwell for a moment on the importance of the packaging field. This is a matter of great economic importance to the country and, in fact, to the world. Suitable packaging reduces spoilage and waste and increases the time before ultimate spoilage occurs. It is very important in the movement of food such as meat, fruit, and vegetables, and it is likewise important in the protection of chemicals, fertilizers, pharmaceuticals, and delicate machine surfaces and parts. This is particularly true when commodities must be moved great distances, through extreme changes of temperature and humidity. The ability to move perishable goods over considerable distances with little loss and at moderate expense is an economic factor of the utmost importance. This development, which was well under way before the war, received great impetus and much scientific study during the war because of the tremendous supply problems. With this background and the augmented supply of suitable materials, the postwar progress should be rapid.

I wish to develop with you the kind of problem this is and the factors that are required for its solution. A somewhat more detailed list of the products which require packaging is:

I. Foods
  A. Types of foods
    1. Grains
    2. Fruits and vegetables
    3. Meats and fish
    4. Dairy products
    5. Edible fats and oils
    6. Spices, relishes, essential oils
    7. Manufactured food products
  B. Mode of preparation and preservation
    1. Fresh
    2. Cooked
    3. Frozen
    4. Dehydrated
II. Drugs, pharmaceuticals, chemicals, specialties
III. Tobacco products
IV. Horticultural items
V. Cosmetics and cleansing agents
VI. Fabrics and clothing
VII. Machines, machine parts, tools
VIII. Lubricating oils and greases

You will note that each of these items is a general class containing many members. For each member of each class that requires a package design it is necessary to know: (1) storage conditions; (2) moisture content; (3) necessary or allowable oxygen; (4)) necessary or allowable carbon dioxide, ethylene, or other exuded products; (5) susceptibility to mold development; (6) possibility of insect infestation; (7) type of processing to be used before and after packaging.

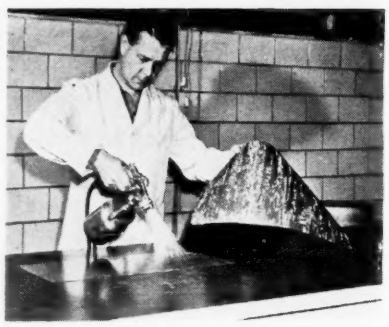
Packaging materials are then examined for their suitability for the specific packaging conditions required. In case no presently available material is suitable, one must modify or combine existing materials in an effort to reach the desired result. It is here that experience, a wide knowledge of available materials, and the application of ingenuity are of great importance. It is,

[1] Talk presented before Cleveland Chamber of Commerce, Oct. 30, 1945.

[2] Vice president in charge of research and development, Goodyear Tire & Rubber Co., Akron, O.

of course, very helpful to have the various materials to be packaged, at least qualitatively grouped into classes with common requirements. Such a classification follows:

Required Package Specification	Packaged Item
A. Controlled moisture vapor transmission	Airplane engines Metal parts Breakfast foods Bread Misc. baked goods Frozen Foods a. Fruits b. Vegetables c. Meats d. Fish Candy Tea Tobacco a. Smoking tobacco b. Cigarettes c. Cigars Horticultural items a. Bulbs b. Roots c. Shrubbery d. Peat moss Wall paper cleaners Effervescent medicinal salts
B. Controlled moisture vapor transmission and high adherence to product	Cheese Butter
C. Controlled moisture vapor and carbon dioxide transmission	Carrots Celery Radishes Beets Turnips
D. Controlled moisture vapor transmission and retention of volatile flavors	Chewing gum Products containing essential oils
E. (1) Retention of original moisture content and prevention of growth of micro-organisms	Eggs Precooked meat products
(2) Retention of original moisture Exclusion of oxygen Prevention of growth of micro-organisms	Ham Bacon
F. Retention of original moisture content and prevention of growth of micro-organisms, by sterilization or cooking temperatures	Meat loaves Dog foods Vegetables Fruits
G. Controlled moisture vapor, oxygen, and carbon dioxide transmission	
1. Minimum oxygen and high carbon dioxide transmission	Coffee
2. Optimum oxygen and carbon dioxide transmission	Papaya Mangoes Fresh meat cuts
H. Controlled moisture vapor transmission, minimum oxygen transmission, exclusion of ultra-violet light.	
1. Atmospheric pressure packaging	Butter Dehydrated Foods a. Eggs b. Vegetables c. Meat products d. Dog food e. Soup f. Fruits
2. Vacuum packaging	Powdered milk Dehydrated vegetables Cooked prunes
I. Controlled moisture vapor oxygen and carbon dioxide transmission and prevention of mold	Oranges Grapefruit Lemons Limes Peaches Pears Grapes Berries Tomatoes Corn-on-cob
J. Retention of moisture controlled oxygen, carbon dioxide and ethylene transmission. Prevention of mold and scald	Apples
K. Liquid Packages	
1. Water impervious	Milk, ice cream, cream, and cottage cheese
2. Oxygen impervious	Pickles, mayonnaise, shortenings
3. Oil and grease resistant	Lubricating oil Shortenings



Spraying Pliobond Cement on Metal Base Before Applying Plastic Sheet

In addition to the foregoing classification, the physical characteristics of the package, its appearance, and conditions of shipment must be considered in the selection of a suitable packaging material.

Many of these products require an exacting protection which has never been devised and may require much careful research before any solution is reached. It is common knowledge that many products must be protected either from the loss of water or from the addition of water. It is likewise known that the exclusion of air is frequently desirable. Few realize, however, that many fruits and vegetables must exclude oxygen and breathe out carbon dioxide and water vapor in order to remain fresh and edible, or that the apple is one of the most exacting of fruits, or that coffee must be kept away from oxygen while allowing carbon dioxide to be exuded freely.

Some of these factors can be controlled by the base material used; others by the plasticizer employed, and still others can be met only by lamination of two or more different materials.

In Goodyear's packaging research, we have found wide adaptation for Goodyear's rubber hydrochloride film, Pliofilm. With a high initial moisture-vapor resistance it can be varied rather widely by the use of suitable plasticizers. Its heat-softening characteristic permits heat-sealing and also stretching and shaping, while its toughness permits its conformation to rough or irregular surfaces. Pliofilm likewise has a high permeability to carbon dioxide, a very useful feature in the protection of certain foods. In the stretched condition it has excellent properties at the low temperatures used for frozen foods.

The modified vinyl plastics make useful films because of ultra-violet light resistance and moisture-vapor transmission that can be varied over a wide range. We believe these materials to be most useful when intelligently modified to meet the immediate requirements.

When strict and prolonged gas and vapor resistance is required, as in certain vacuum packages, coated foil and coated paper give superior results. The coating material is a plastic selected to meet the requirements and particularly to permit a heat seal.

These few illustrations show how important diversified fabricating materials may be, as mentioned at the beginning.

I have dwelt at some length on the complexities of the packaging problems, because I wished you to understand that there is much careful work to be done before all of the possible fruits of this rich economic field can be harvested. It will be apparent, I think, that the transition from the tin can, the glass jar, and the cardboard box is not entirely a matter of appearance or sales appeal. It may be that sound preservation technique requires a much different kind of a package. In proportion as these problems are adequately solved, you and I will enjoy better quality and better-tasting food, in season and out.

Adhesives

A rapidly growing use for synthetic resins and plastics is in the field of adhesives or cements. The first adhesive of commercial importance was an impure form of gelatin obtained from animal hoofs and bones and from the skins and heads of fish and was known as animal glue, bone glue, or fish glue. This material has been used since ancient times for cementing wood, paper, and other porous materials. The hardening of this type of glue depends upon the evaporation of water, and it will not bond in cold weather and is not waterproof. Glues made from casein are somewhat more resistant to water, but are still subject to failure on exposure to weather.

The need of adhesives that were waterproof and permanently flexible resulted in the development of pyroxylin cements and the special rubber cements. Plastic adhesives from synthetic resins were developed during the war which are quite universal in their application and are outstanding in bond strength, waterproofness, flexibility, and general durability. One of these, known as Pliobond, is composed of a mixture of thermosetting synthetic resins and synthetic rubbers in a rapidly drying solvent. It has been employed for bonding a variety of materials, such as wood, metals, plastics, fabrics, ceramic ware, vulcanized rubber, paper, leather, glass, plaster, and Portland cement (concrete). Application can be made either as a cold setting cement or under heat and pressure, depending on requirements. It will adhere to any clean and dry surface, and in many applications its bond strength exceeds the strength of the materials bonded. In bonding metals, shear strengths as high as 2,400 pounds per square inch have been obtained. Its properties can be summarized as follows:

1. Ease of application
2. Rapid drying and setting
3. High bond strength
4. Waterproofness
5. Chemical resins
6. Solvent resins
7. Flexibility
8. Durabiilty

The bonding of rubber to steel which was formerly done by brass plating the metal, is now accomplished more satisfactorily and cheaply by means of a plastic adhesive which gives an integral bond during vulcanization of rubber. This procedure was employed extensively in combat tank tracks during the war and will find many peacetime applications.

Plastic resin adhesives of the phenolic or Bakelite type are used extensively in laminated plastic materials. These are composed of layers of paper or fabric bonded and molded into any desired shape and have found many diversified uses from Army helmets to table tops. Plastic resin bonded plywood has assumed a new and important significance because of the shortage of good lumber and will play an important role in our postwar building program.

Plastic Insulating Materials

Another recent development in the plastics field has been the introduction of several plastic insulating materials. In each case these materials are of a plastic composition which is formed as a rigid sponge-

like structure having many minute cells and thus a large proportion of dead air space.

Pliofoam made by Goodyear is a urea-formaldehyde plastic which is formed by foaming a water solution of a partially condensed urea-formaldehyde resin and then quickly setting or solidifying the material by means of catalysts as it remains in the foamed state. The process is one which requires extremely nice control both in raw materials and operation since the entire operation exclusive of drying must be completed in only a few minutes. The foam is produced in large, thick sheets which can be cut to size and have the following general characteristics: (1) extremely light weight; (2) excellent heat insulator; (3) excellent sound insulator; (4) non-toxic; (5) insoluble in all solvents and resistant to dilute acids and bases.

Pliofoam may be coated and impregnated with rubber or a variety of synthetic resins to adapt it to special uses. Practically all of the limited wartime production has been used in the neoprene impregnated form as a filler to surround the self-sealing fuel tanks of military aircraft, thus greatly reducing the fire and explosion hazard when these tanks are pierced and small amounts of gasoline escape.

In a normal world, suggested applications for Pliofoam are: refrigeration and building insulation; sound deadening and insulation in railway cars, buses, automobiles, and airplanes.

The following table offers a comparison of the insulating properties of Pliofoam with well-known insulating materials:

THERMAL CONDUCTIVITY OF VARIOUS INSULATING MATERIALS

Material	K Factor*	Density Lbs./Ft.³
Pliofoam		
Cakes—80° F.	.22	.60– .85
compressed 2:1	.21	1.2 –1.7
containing 33% H_2O	.29	.9 –1.2
Powdered	.24	2.5
Neoprene impregnated	.27	3.5
Celotex	.34	14.1
Fibreboard	.34	18.3
Rock wool	.26	6.0
Glass wool	.29	4.0
Hair felt	.26	9.2
Cotton (Rayn-O-cell)—fluffed	.31	.95
Kapok	.32	2.56
Cork board	.25	5.4
Expanded Vermiculite	.45	5.9

* B.T.U. per hr./sq. ft.—1" thick for 1° F. difference (opp. sides).

Lacquers

Nitrocellulose, or pyroxylin, was the first synthetic plastic to be used successfully in surface finishes. Although the first practical application of nitrocellulose lacquers was in 1882, they were not used very extensively until 1924 when they were introduced as automobile finishes to replace the multi-coat paint and varnish, horse-carriage finishing system. These fast drying lacquers greatly simplified the finishing of automobiles and were very popular until they in turn were replaced by the more durable baked alkyd enamels. Nitrocellulose lacquers are still being used for metal finishing, but by far the largest usage is in the coating of fabrics to make artificial leather and in finishes for artificial leather to obtain artistic effects. Such artificial leathers are used for book covers, luggage, shoe linings, upholstery, and many other purposes.

Practically all of the commercially available plastic resins are used in lacquers and other surface finishes in one form or another. The phenol-formaldehyde resins are used in paints, varnishes, and enamels for a variety of applications such as furniture finishes, coatings for printed linoleum, boats, plywood aircraft, and wooden handles for kitchen utensils. The alkyd resins usually made from naphthalene are the basis of baking enamels of outstanding durability. These were used for finishing automobiles before the war, and in the form of lusterless olive-drab enamels they protected and camouflaged every truck, tank, jeep, gun, and plane in the U. S. Army. Alkyd air-drying resins were also used in more than 50 specification finishes by the U. S. Navy and Maritime Commission. So great was the demand for alkyd resins during the war that our entire production of 100 million pounds per year was allocated to specific uses. Now we can again expect to find this material in automobile finishes, and in combination with urea resins, in finishes for refrigerators, kitchen cabinets, hospital equipment, washing machines, metal furniture, imitation tile wall panels, and many other applications.

The use of a clear coating of vinyl plastic in the well-known "Keg-lined" cans for beer has dramatized the lack of taste and odor of this resin, its resistance to alcohol and water, and its impermeability to salt penetration. These same properties are utilized in vinyl coatings for other food and beverage containers and in vinyl resin calender-coated paper used as liners in bottle caps and jar closures for a wide variety of products. The tough and flexible vinyl plastic coating withstands forming and stamping operations and is applied to flat metal sheets from which bottle and jar caps and closures are stamped and formed. Flexible vinyl coatings having high gloss and good durability are used in such diversified applications as finishes for paper labels, collapsible metal tubes for ointments, salves, and dentifrices, and rubber play balls to enhance appearance and sales appeal as well as to afford resistance to oil, grease, alkali, and water and facilitate cleaning. Fire- and flame-proof vinyl finishes are used extensively for coating fabrics and electrical wire.

Protective coatings based on chlorinated and cyclized natural rubber were used before the war in applications requiring resistance to acids, alkalies, and other highly corrosive influences. Some of these derivatives of natural rubber, such as Pliolite, are outstanding in chemical resistance and were used in coatings for chemical plant equipment and machinery, storage tanks and tank cars for handling hot caustic solutions, gas holders, and other metal protective applications. In many instances these derivatives of natural rubber met a need which was not fulfilled by any other available materials, and their use was, therefore, firmly established when our supply of natural rubber was cut off by the war. Many of the desirable features of the commercially important derivatives of natural rubber have been duplicated in derivatives and modifications of synthetic rubber. Some of these were used during the war, and others are now in the process of development. It is logical to assume that the field of usefulness of these synthetic materials will be extended by selection of the proper type of synthetic rubber to bring out certain desirable characteristics which were not inherent in the products made from natural rubber.

Summary and Conclusions

At the beginning I indicated to you that the field of plastics is so broad that a complete discussion of plastics' applications would be impractical. Hence this talk was limited to a review of the problems in selecting and using packaging materials, with a few added comments on adhesives, plastic insulation, and lacquers.

It only remains to inquire what the nearby tangible effects of these developments may be on the every day lives of all of us. In the realm of food for our tables, I think you may consider it quite certain that the quality, freshness and flavor of a large variety of foods, will improve far beyond anything we have ever known before. Fresh fruit and vegetables will be available in season and out, the year around, because they can be preserved by suitable packaging, if not from season to season, at least for sufficient periods to permit their being transported from distant producing points where the seasons supplement ours. These benefits should not cost us more money, but, rather, less, because of lower spoilage, more economical storage, and steady demand. We shall receive delicate instruments and machine parts in well-protected condition. This will soon lead to the next step, which will be the permanent protection of sensitive instruments from air and moisture. Watches and clocks, for example, now occasionally made waterproof will, before long, be unsalable unless protected from air and moisture by a tight outer casing.

The applications of adhesives may not seem to touch our personal existences very closely, but a second glance will show that they do. Wood is becoming permanently scarcer and more expensive. Waterproof and non-warping plywood and other laminates will rapidly fill the gap and do a better job. Many structures small and large, from radios to buses, will be put together —at least in part—by simple adhesive methods, which will simplify and cheapen the cost of manufacture.

With the use of plastic insulating materials, deep-freezing will be a more practical home and commercial process. Automobiles, airplanes, trains, and buses may also be made more comfortable for the traveler by the use of plastic insulating materials.

The advantages of better lacquers and protective coatings are too numerous to mention. No one here has failed to notice the remarkable effect of a new coat of paint, both in appearance and cleanliness. You can well remember when varnish was an impractical floor finish and when automobile paint began to go bad the day the cars came out of the factory. Think of what the increased durability of these two items alone has meant to your enjoyment and comfort. Certainly the widespread improvement in almost all types of lacquers will create direct savings and increased comfort for all of us.

These, briefly, are a few of the things that plastics can and will do for us in the approaching months. They make somewhat more possible a pleasant and stable world if we have the energy and the wit to supply the other elements.

SPI Informative Labeling

THE Society of Plastics Industry, 295 Madison Ave., New York, N. Y., through its president, Neil O. Broderson, has announced the launching of a nation-wide move by member manufacturers to aid consumers in obtaining the greatest possible satisfaction from plastics purchases. The makers of plastics articles are undertaking an informative labeling program endorsed by leading retail executives which will tell the buyer just what the qualities of his purchase are and how the

(*Continued on page* 438)

RUBBER WORLD
NEWS of the MONTH

Highlights—

The report of WPB Director of Rubber Programs, Robert S. Wilson, on his return to his post as vice president of the Goodyear Tire & Rubber Co. with the Dissolution of the War Production Board on November 3, and a study on the rubber situation by John L. Collyer, president of The B. F. Goodrich Co., released on November 9, afforded some of the latest information on the current national and international situation in rubber. A detailed account of conditions in the Far East by John W. Bicknell, of the United States Rubber Co., prepared from recently received eye-witness reports of the company's plantations in Malaya and Sumatra, was somewhat pessimistic regarding the early resumption of natural rubber priduction as far as this company's holdings were concerned. Tire production was reported running approximately 35% behind requirements by The Rubber Manufacturers Association. Local URWA unions at the Akron plants of the Goodyear, Firestone, Goodrich, and Seiberling companies were again planning for NLRB strike votes about December 1. The Firestone and Goodyear companies asked the NLRB not to hold such elections since there was not current labor dispute which threatened to interrupt war production and so no necessity of a strike vote under the Smith-Connally Act.

Many Events Affect Industry Outlook

Numerous events, statements, and rumors during November did their part in suggesting possible effects on the future of the rubber industry, but there was still very little evidence that anyone was quite sure just what the national and international situation would be during the coming year. Robert S. Wilson, Director of Rubber Programs for the WPB, with his retirement from government service when the War Production Board was dissolved on November 3 and its remaining activities were taken over by the Civilian Production Administration, issued a report in which he emphasized that one of the "momentous" problems confronting the nation was the task of integrating America's war-born synthetic rubber industry with the natural rubber producing industry of the Far East. John L. Collyer, also a former Director of Rubber Programs, made public on November 9 a study by The B. F. Goodrich Co. entitled "Rubber!—Where Do We Stand?—Where Are We Going?" United States Rubber Co., following receipt of first eye-witness reports from Malaya and Sumatra on the condition of its plantation properties there, indicated considerable damage had been done to its holdings.

Rubber Director Wilson's Report

The activities of the WPB Rubber Bureau from July 1, 1945, to V-J Day, after V-J Day, and peacetime reconversion problems of the rubber industry were reviewed by Rubber Director Wilson in his report to J. A. Krug, chairman of the WPB, on his return to his post as vice president of the Goodyear Tire & Rubber Co. on November 3.

"Tires, tubes and thousands of other rubber products must be produced to supply a nation that has been starved for rubber goods," Mr. Wilson said.

With respect to tire rationing, he stated: "Current production is climbing, but has not yet reached the levels previously anticipated. Until production becomes greater, a definite date for ending of rationing cannot be established."

A policy has been established for the allocation of natural rubber as it is received in increasing amounts in this country, this policy being based on the use of natural rubber first in those products where it is most needed for quality reasons. Mr. Wilson complimented the industry on its wartime record and concluded his report with a summary review of the rubber situation during the war period. The full text of this Rubber Director's report will be found on pages 373-76.

The Collyer Study

In making public a new analysis of the world rubber situation, Mr. Collyer of Goodrich, advised: "We must not fail to prepare now for our continuing military security, and for a wise solution of the surplus problem which will result from an estimated potential world capacity of 3,000,000 tons of natural and synthetic rubber."

Referring to the active study that has been under way for more than a year by the Rubber Study Group of the governments of the Netherlands, the United Kingdom, and the United States, and noting that more recently the Director of War Mobilization and Reconversion of this country has appointed an inter-agency policy committee on rubber which has been assigned the task of studying problems and making recommendations of United States' policy, Mr. Collyer emphasized that guiding principles should include *three basic* considerations: (1) The United States and all peace-loving nations can never again afford to risk their freedom through a famine of rubber. It is a vital factor of military power, as indispensable as steel or oil. (2) The consumers of the United States and the world must have the highest-quality rubber products at the lowest cost at which they can be economically provided. (3) The approaching problem of the world rubber surplus must be constructively attacked, i.e., by expansion of rubber uses through low and stable prices.

"To insure military security, we believe our government should maintain a total standby general-purpose synthetic rubber production capacity of 600,000 to 700,000 tons a year in plants kept in condition and ready to run," it was stated. "From this capacity we recommend a minimum production and use of 200,000 or more tons a year of general-purpose synthetic rubber, regardless of economic factors."

After military security is assured by establishing a stockpile of natural rubber and maintaining production of synthetic rubber, the next consideration should be to supply consumers with the highest quality products at the lowest economical costs, it was said.

"The choice of materials, beyond the 200,000 to 300,000 tons of military synthetics —which includes the probable annual production of approximately 100,000 tons of special-purpose synthetic rubbers — should be left to the unrestricted play of economic forces.

"The reality of low-cost, high-value American synthetic rubber is the pivot on which postwar rubber developments will turn," Mr. Collyer explained.

"A prime objective of natural rubber producers should be to regain through their price policies such a sizable share of the world rubber market as is needed to sustain their economies and to make possible rising standards of living in the rubber-growing territories.

"If many nations with presently lower standards of living are to expand their use of rubber, its price must be low. To this end the earliest possible establishment of a Far East price of around 12¢ or less a pound (U. S. currency) for natural rubber would assure efficient rubber growers a reasonable advantage in the face of competition with low-cost synthetic rubber, as well as a reasonable return on their plantation investments.

"However, there must first come a period when the plantations are resuming production. At the outset the price might well be the 18½¢ (U. S. currency) level at which rubber was sold in the Far East during the prewar period when we were building emergency stockpiles while the war clouds were gathering, and before synthetic rubber had become an active threat to natural rubber prices," Mr. Collyer added.

In his analysis it was also pointed out that the Armed Forces in the first half of 1945 were using rubber at the rate of 550,000 tons a year, and the recommendation was made that they should continue to use many of the synthetic rubber products manufactured in peacetime, since they they might have to do it again in times of a national emergency. Active research directed toward the development of domestic sources of good-quality natural rubber for possible emergency use is a further desirable security measure, it was said.

The study included a chart recording the price fluctuations induced by artificial restrictions and controls on rubber that had existed in the past, and this chart contained an explanatory note that, based on projected United States annual rubber consumption for the years 1946-50, a variation of 1¢ a pound in rubber prices represents a change in costs of $18,500,000.

Reports from the Far East

Quite a considerable number of reports came from the Far East last month, most of which originated from British Malaya since the unrest and fighting in the Dutch East Indies has delayed attempts to evaluate the condition of rubber growing areas there. In Malaya, although except for lack of machinery the plantations do not seem to have been damaged very much, other factors such as lack of inland transport, non-availability of more than 25 to 50% of the necessary labor, and an indication that such labor as is available will demand much higher wages than before the war,

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make the outlook for early resumption of natural rubber production on a prewar scale anything but bright. Rubber stocks abandoned by the Japanese totaling somewhat more than 50,000 tons are being shipped as fast as ships are made available. One report indicated that the 18¢ a pound (U. S. currency) price established by the British for rubber at Singapore was not completely satisfactory to plantation operators; while another attributed to Col. R. M. Williams, chief of the British military administration's trade and industry department in Malaya, stated that this price was regarded as satisfactory by both growers and consumers.

One of the most detailed accounts of the condition of plantations in Malaya and Sumatra was made by John W. Bicknell, managing director of the U. S. Rubber's plantations in those areas, following receipt of written reports from company employes recently released from Japanese prison camps and from a report submitted in person by W. E. Cake, head of the company's scientific research on the plantations, who had just arrived in this country. Following his release from a prison camp where he had been held since 1942, Mr. Cake was able to observe some of the plantation areas before leaving for the United States.

"Reports indicate that 18,000 acres, containing 1,800,000 trees, have been lost, due chiefly to neglect of upkeep and to the Japanese actions in cutting down trees in certain areas for the planting of food crops," Mr. Bicknell revealed. "Destruction of 1,800,000 trees, of which 1,500,000 were on Sumatra and 300,000 on Malaya, means a loss of one out of every five and a half trees standing before the war, for we had a total of 10 million trees on these plantations," he added.

"Such a loss is a serious item when considered in the light of early production, where the yield was approximately 400 pounds an acre, but there is a redeeming feature in that the acreage can be replanted to high yielding stock, which produces as much as 2,000 pounds an acre. Of course this replanting will be an expensive procedure, as will be the rehabilitation of the undamaged trees through removal of weeds and undergrowth, a necessary task before tapping can commence," it was explained.

"Loss of equipment has been heavy. Although reports state that the central factory in Sumatra appears to be in good operating condition, on some of the outlying estates all machinery, motors, tanks, piping, and valves have been removed. Fifty miles of the narrow-gage railroad track, out of a previous total of 100 miles, have also been removed.

"The latex loading installation at the harbor of Belawan on the East Coast of Sumatra is reported to have been destroyed, but some shipping of latex will be possible by direct loading from tank cars. The same condition exists at the latex loading plant at Port Swettenham in Malaya, where eye-witness accounts relate the disappearance of 11 out of 13 latex storage tanks, and the destruction of all piping and machinery.

"Members of the company who have recently seen the plantations state that some production can be undertaken as soon as conditions allow resumption of work. However, an important factor is the amount and quality of labor available in both Malaya and Sumatra. Before the war there was a total of 31,500 native workers available on the company's plantations. More than 23,500 were on our regular payroll. Of the total available workers, it is understood that one-half have either been transported, in the case of Malayan labor, to Japanese slave labor camps in Burma and Siam, or have been dispersed. Restoration of rubber estate labor forces will be a difficult problem, and its solution will depend greatly upon the speed with which stable conditions are established.

"Before the war we had 125 European and American men on our Far Eastern staff. Twenty-one of these escaped from the Far East, but 104 were interned in Japanese prison camps and in the slave labor battalions in Siam and Burma. Eighty-three of the 104 internees are reported as being alive; six have not been heard from as yet and, unfortunately, reports indicate that 15 have been killed or have died in the camps."

U. S. Rubber's plantation operations before the war represented an investment of $38,000,000. Of 131,000 acres, 101,641 were planted with 10,000,000 trees with a capacity of 75 million pounds of rubber a year. More than two-thirds of the rubber was preserved, concentrated, and shipped to the United States in the form of latex. The plantations are located in two areas facing each other across the Malacca Strait. These areas are on the West Coast of British Malaya and the East Coast of the island of Sumatra.

In British Malay the company owned and operated five plantations and a latex loading plant. The locations and acreages of these operations follow:

Plantation	Location	Planted Acres
Harvard	State of Kedah, near Penang	10,437
Dublin	State of Kedah, near Penang	10,443
Bristol	State of Selanger	2,307
Port Swettenham	State of Selangor	Latex loading plant
Linden	State of Johore	2,546
Wessyngton	State of Johore	3,037
Total		28,770

In Dutch Sumatra the company also had five plantations with a latex shipping plant, located as follows:

Plantations	Planted Acres
HAPM (Holland American Plantations Mij.) At Kisaran	55,749
Londoet	6,382
Damoeli	5,089
Si Pare Pare	4,632
Langkat	1,019
Belawan	Latx shipping plant
Total	72,871

U. S. Rubber plantations in Sumatra were held under deed originally granted by native sultans and approved by the Netherlands East Indies Government. This land was given for an annual rental per acre, and on condition that the land be developed for agricultural purposes, it was said. The leases expire in varying acreage in various years between 1961 and 1996. It was the policy of the Netherlands East Indies government before the war to replace the grants, as they expired, with 75-year governmental leaseholds.

In Malaya, the company held its land in perpetuity, for annual rentals, under grants of the States of Kedah, Johore, and Selangor.

Because of political disturbances in the Far East, a survey party which the company organized and which was originally scheduled to leave the United States in October has been delayed until clearance is given by the Army. It is now impossible to predict when the situation will settle sufficiently to allow private enterprise to enter the Indies, but the company wishes to send competent men into the area as soon as possible to estimate the damage with a view to rehabilitation.

With reference to the 550,000 tons of natural rubber expected to be produced in the Far East in 1946, the United States, on a *pro rata* basis, would probably receive about 200,000 tons of this amount, Mr. Bicknell said.

London Parley Comments

On the eve of his departure on the *Queen Mary* for the meeting of the government and industry leaders of the Netherlands, United Kingdom and the United States, Harvey S. Firestone, Jr., president of the Firestone Tire & Rubber Co., issued a statement in which he said: "The least the United States should do is to provide for continuation of a good portion of our synthetic rubber plants and for further intensive research in the improvement of this product."

He also recommended that this country establish a natural rubber stockpile once rubber is plentiful again.

"I hope this conference will result in arrangements which will be beneficial to all participating nations, and be helpful in insuring that the United States will never again be in the position it was in when we were attacked at Pearl Harbor, in so far as rubber is concerned," Mr. Firestone added.

These comments were similar to those previously expressed by John L. Collyer and P. W. Litchfield, chairman of the board of the Goodyear company.

According to a report from London, the *Financial Times,* referring to a recent American forecast that there might be a surplus of rubber within the next few months, declared that neither the chairman of the Dunlop Tire & Rubber Co., Ltd., nor the Federation of British Rubber & Allied Manufacturers Association would agree.

"The Dunlop chairman has in fact suggested that while some crude rubber should be available as a result of the liberation of Malaya and the Netherlands Indies, a period of two years will probably elapse before full output is reached," the *Financial Times* stated.

Quoting the opinion of the Federation, the Times said editorially, "First and foremost, industry wants natural rubber. It can neither provide maximum employment nor recover its prewar productivity until it has an adequate volume of natural rubber."

Synthetic rubber, it was said, had some advantages, but they did not in general outweigh its defects in manufacture and use. For the time being, though to a decreasing extent, manufacturers would have to make up the gap in raw materials and supplies by resorting to synthetic or reclaimed rubber and plastic products.

A further report from London on November 21 by Sidney Gruson, appearing in *The New York Times,* revealed that representatives from France were also attending the world rubber parley. This story suggested that an arrangement might be made for closing down the less efficient high-cost American synthetic rubber plants provided the British and the Dutch agreed

to eliminate the inefficient natural rubber estates.

It was said that Sir John Hay, who represents the British producers at the conference, opopsed the idea of a fixed price of, say, 12¢ a pound for natural rubber as suggested by John L. Collyer.

"It seems strange," Sir John was quoted, "that the concept of a fixed price for rubber should emanate from America. No industry can work for long within such a straitjacket without the danger of loss of enterprise and progress and the risk of that price getting out of true relation to the constantly varying values of a dynamic world.

"If for a very temporary period and to meet an abnormal situation a price has to be fixed, it should be fixed by reference to some principle and not be the outcome of influence exerted by pressure either within or outside the industry."

Another report from London under the dateline of November 22 in *The New York Times* indicated that prices for natural rubber from the Netherlands India will have to be raised above prewar levels in order to offer higher inducements to native producers affected by rising costs of living and by political unrest.

Both the Dutch and the French estimate that not more than 10% of the rubber plantations in Java, Borneo, and French Indo-China were damaged by Japanese occupation, but some fear exists that additional damage may result from current disturbances in those areas. Forty per cent. of normal Netherlands India production is the maximum anticipated during the next twelve months, it was said.

Tire Industry Production and Consumption

On November 5 the OPA revealed that passenger tire applications at that time exceeded supplies by nearly one million tires and stated that a substantial increase in production will be necessary to permit ending rationing within the next few months. This backlog of unfilled applications represents demand in excess of 2,500,000 passenger tires that have been rationed monthly since June to eligible applicants, principally those who need their cars to continue in their jobs, it was pointed out.

Production of passenger-car tires totaled 7,045,916 in third quarter, W. James Sears, director of the Rubber Division of the CPA, announced on November 7. With facilities for passenger-car tire manufacture being increased, recently revised estimates indicate the production of 11,000,000 passenger-car tires in the fourth quarter. Passenger-car and motorcycle-tire production is expected to total 66,060,000 for the year 1946. Since the production of tires for military needs is now negligible, substantially all of the current truck and bus tire output will be available for civilian truck and bus use, either as replacements or for original equipment, Mr. Sears said.

Tire production statistics for nine months of 1945 from the CPA Rubber Division appear in Table 1.

Table 1. Production of Tires by Type and Camelback—Nine Months, 1945

Item	1945 1st Qtr.	1945 2nd Qtr.	1945 3rd Qtr.	1945 9 Mos.	9 Mos. 1944
Airplane tires—Total	338,861	304,282	127,189	770,332	1,109,842
Truck and bus tires—Total	5,391,845	4,748,080	3,112,588	13,252,513	10,721,098
Tractor-implement tires—Total	639,918	463,443	679,319	1,782,680	1,557,002
Industrial tires—Total	1,015,913	1,128,382	662,155	2,806,450	2,595,172*
Passenger and motorcycle tires—Total	5,056,605	5,043,634	7,045,916	17,146,155	12,531,318
Bicycle tires—Total	1,140,680	1,060,453	1,271,913	3,473,046	3,296,188
Camelback (long tons)—Total	36,436.3	38,361.2	33,704.9	108,502.4	123,350.8

* Cured-on solids included for eight months.

Table 2. Estimated Automotive Pneumatic Casing and Tube Shipments—Production and Inventory—September, 1945—First Nine Months, 1945—1941

	Original Equipment	Replacement War Orders	Replacement Civilian	Export	Total Shipments	Production During Month	Inventory End of Month
Passenger Casings							
September, 1945	136,464	1,332	2,366,059	15,165	2,519,020	2,600,089	
August, 1945	56,694	8,227	2,128,359	20,898	2,214,178	2,485,634	1,246,012
First 9 Mos., 1945	371,751	121,477	15,996,032	138,664	16,627,924	17,045,190	1,291,836
First 9 Mos., 1941	16,205,082		28,130,961	513,825	44,849,868	41,544,302	4,011,515
Truck Bus Casings							
September, 1945	209,393	29,942	652,732	34,735	926,802	831,820	
August, 1945	325,595	193,197	560,541	38,102	1,117,435	1,170,364	825,942
First 9 Mos., 1945	4,147,075	4,560,806	4,326,513	183,014	13,217,408	13,257,753	711,250
First 9 Mos., 1941	3,486,684		4,571,435	735,610	8,793,729	8,222,592	1,142,566
Total Casings							
September, 1945	345,857	31,274	3,018,791	49,900	3,445,822	3,431,909	
August, 1945	382,289	201,424	2,688,900	59,000	3,331,613	3,655,998	2,071,954
First 9 Mos., 1945	4,518,826	4,682,283	20,322,545	321,678	29,845,332	30,302,943	2,003,086
First 9 Mos., 1941	19,691,766		32,702,396	1,249,435	53,643,597	49,766,894	5,154,081
Passenger, Truck and Bus Tubes							
September, 1945	349,518	52,222	2,618,209	43,182	3,063,131	3,061,449	
August, 1945	377,388	301,718	2,305,120	59,346	3,043,572	3,239,936	2,783,814
First 9 Mos., 1945	4,591,334	4,569,311	18,686,748	257,833	28,105,226	28,623,571	2,707,621
First 9 Mos., 1941	19,663,938		27,625,366	1,041,584	48,330,888	46,790,630	5,430,556

RMA Reports

The Rubber Manufacturers Association on November 14 reported that production of civilian passenger tires was running approximately 35% behind requirements, based on the latest production reports. This means that output fails by 2,100,000 units to reach present monthly capacity, estimated by the industry at 6,000,000 casings in passenger-car sizes. It also means that little or no progress is being made toward eating into the four-year-backlog of civilian tire demand, the Association said.

One of the chief limiting factors is manpower, and the tire manufacturing industry needs at least 7,000 workers at once. The existing shortage of labor was aggravated in October. During that month plants in Akron and Los Angeles operated only on the basis of a six-hour day. Plants thus affected account for more than half of the nation's tire production. Another important aspect of the manpower shortage is absenteeism, which continues high. It is so high, in fact, that it has become an important factor in a weekly equation that involves trimming and cutting production schedules to the point that the schedule can be made to balance with the output of available manpower.

In order to close the gap between lagging production and capacity, RMA emphasized that it could certainly be narrowed by a return to the eight-hour day until sufficient labor to warrant six-hour day operations became available. Or it could be closed, even with present manpower, if sufficient improved tire-building machinery were available. Enough of the new high-speed machines could close the gap, but to date only a few of them have been installed. These machines are expensive, and it takes a long time to make them and get them into operation, it was said.

Such is the current tire situation, but the fact remains that even if the gap between production and capacity were closed at once, it would be months, many months, before tires could be made available in normal supply, the Association pointed out.

In its regular monthly report of tire production statistics, issued on November 21, for the month of September, the RMA revealed a drop of 28.9% in truck and bus tire output and an increase of 4.6% for passenger-car tires over August.

Tire production statistics from the RMA are shown in Table 2.

Used Truck Tire Sales

A nation-wide sale of approximately 500 carloads of used, repairable truck tires during the 90 days following November 8 was announced on that date by the Office of Surplus Property, Consumer Goods Division, Reconstruction Finance Corp. The bulk of the tires are located at various military depots along the Atlantic and Pacific seaboards and will be sold to priority claimants in carload lots or in truckload lots with a minimum quantity of seven short tons, it was stated. All shipments will be in the assortment as they are accumulated by the military, without regard to size, type, condition, or brand name and without expressed or implied warranty.

Orders will be accepted in the 11 OSP regional offices, but actual allocation of the tires will be made in Washington. Whenever demand exceeds supply, distribution will be limited to one carload per purchaser. Under priorities established by law, federal agencies will have first claim on the tires, with states, counties, and cities falling next in line. Honorably discharged veterans and those on terminal leave who have been certified as eligible by Smaller War Plants Corp. will have next priority to purchase. Any tires remaining will be made available to dealers and then to tire manufacturers, it was said.

American Cyanamid & Chemical Corp., 30 Rockefeller Plaza, New York 20, N. Y., as part of its postwar expansion program, is building at Bridgeville, Pa., a $2,000,000 plant to increase its existing facilities for producing alkyd coating resins. These resins, important ingredients in new lines of paint, varnish, enamels, and other protective coatings, are derived from phthalic anhydride. The company's present plant at Bridgeville is one of the world's largest producers of this chemical. Built of steel and concrete, the new resin plant will occupy 30 acres including space for storage tanks, railroad loading, and other service facilities. It will house the world's largest alkyd resin kettles ,and the continuous manfuacturing process will incorporate Dowtherm heating, automatic controls, and mechanical handling throughout. It is estimated that construction will take a year.

Management-Labor Relations

While one management and one labor representative attended President Truman's management-labor conference in Washington during the month of November, relations between management and labor in many plants and companies in the industry continued to be very much in the need of improvement.

Maintenance and engineering department employes at the Firestone Tire & Rubber Co.'s plants in Akron participated in two work stoppages in four days at the end of October, because of their dissatisfaction with wage rates. Nearly 15,000 production workers were affected.

The Six-Hour Day Dispute

Partial return to the eight-hour day at the Akron plants of the Goodyear Tire & Rubber Co., was ordered on October 31 by William E. Simkin, impartial umpire of Goodyear labor-management disputes since his appointment by the NWLB last summer. Declaring that the union had no right to order its membership to revert to the six-hour shift on October 1, Mr. Simkin ruled that the company "may resume eight-hour schedules in such departments as it may decide require such method of operation." He also decided that the six-hour shift shall be fully restored on production operations not later than February 1, 1946, unless the company is able to show that the manpower shortage is still critical to the extent that production would be seriously unbalanced on a plant-wide six-hour shift schedule. The difficulty in this controversy was conflicting interpretations of contract provisions pertaining to a return to six-hour shifts in production after the war emergency. The company contended that the clause "when qualified labor is available" certainly could not be considered as an existing situation nor applicable in the present, while the union contended that the company had not recruited labor extensively, that employment qualifications were too stringent, and that it was proper for the union to set and enforce the October 1 deadline. More important, possibly, was the contention by the union that the impartial umpire had no jurisdiction over the matter since it was not a part of the existing local union contract with the Goodyear company.

During the week of November 5, production was curtailed, and work scheduled disorganized at the Akron Goodyear plants. In spite of the ruling of the umpire, the workers continued on their six-hour day, and the local union voted on November 11 to appeal to the courts or to the WLB on the matter. Meanwhile Mr. Simkin was reported to have prepared letters of resignation to the company and the union because the union had refused to accept his decision.

Local Union Elections and Strike Votes

The election of officers of the local unions at the major rubber company plants, in Akron, the results of which have been considered as useful in interpreting possible pattern of labor-management relations in Akron during the coming year, were inconclusive at Goodyear and Goodrich, and although I. H. Watson was again elected president of the local Firestone union, his opponent, E. H. Little, charged Mr. Watson as ineligible to hold office because he was five months behind in his dues at the time of the election and thus not in good standing at the time of the vote. None of the candidates for president, vice president, secretary, and executive board of the Goodyear local union received the necessary majority of all votes cast so that a so-called "run-off" election for these offices will be required. The same situation developed at the local union elections at the Goodrich company, and the second election was announced for November 28.

Early in November all of the local unions at the major rubber company plants in Akron also petitioned the NLRB for strike votes, and following the lead of these locals, local 18, URWA, at the Seiberling Rubber Co. also requested that a strike vote be held. Issues on which the strike votes are being sought include the wage-hour demands of the URWA program as announced last month.

The Firestone company asked the NLRB to take no further steps in connection with the strike vote notice of the Akron local union and also requested that a strike vote not be conducted by the NLRB. Firestone's position was that at the Akron plants of the company there was no current labor dispute which threatened to interrupt war production, and therefore no necessity of a strike vote existed under the Smith-Connally Act.

Following this action by the company, the local Firestone union was ordered by the NLRB to show cause why a strike vote should be held. A request similar to that of the Firestone company was presented to the government agency by Goodyear.

The Kelly-Springfield Tire Co., Cumberland, Md., was shut down early in November when workers of the local union walked out shortly after the conclusion of an unsuccessful wage conference. A strike vote was scheduled for this plant on November 4. The company issued a statement in which it estimated that granting of the union's demands for a wage increase of 30¢ an hour, a basic thirty-hour week, time and a half for hours worked in excess of six hours a day and 30 hours a week, and straight time for six designated holidays not worked would cost the company in excess of $2,000,000 a year and that it would be "utterly impossible" for the company to grant the demands and remain in business.

U. S. Rubber Negotiations

The United Rubber Workers (CIO) seven-point program, presented uniformly to all rubber manufacturing companies during October, was discussed by representatives of the international and local unions at the United States Rubber Co. plants meeting in Washington during November. It was reported that the company had refused the union's demand for a 30% general wage increase, but that a counter-offer of a 10% increase predicated on an increase in ceiling prices for tires, had been made by the company. It is understood that a 10% increase for this company would raise the average earnings of its workers to about the 30% figure mentioned by President Truman in his October 30 statement and also qualify the company for a price increase. Spokesmen for the company and the union stated that the negotiations were proceeding in a friendly fashion. Following the company offer in mid-November, the neogtiations were recessed until November 27, when representatives of the company and the union were scheduled to resume their discussion.

Arrowhead Rubber Co., 2244 E. 37th St., Vernon 11, Calif., has anounced that H. K. Pohlman has succeeded H. Franklin as president and general manager.

Wider Use of Rubber

WPB on November 2 authorized the use of natural rubber and natural rubber latex in the manufacture of approximately 75 additional products and approved increases in the percentages of natural rubber permitted in the manufacture of nearly 50 other items. This liberalization of natural rubber consumption, expected to speed reconversion in many lines of manufacturing, was effected by amendment of R-1, including Appendix II. It is estimated that the additional amount of natural rubber to be consumed as a result of this revision of the rubber order will be much less than the quantities allowed for military items that are now either out of production or are being made in limited amounts.

Among household goods for which natural rubber is now allowed are water bottles and combination syringes, ice bags, fountain syringe bags, and invalid cushions. Use of natural rubber is also being permitted for fountain pen sacs. Rubber restrictions, moreover, have been lifted on a number of articles needed in the care of infants. The nipples, caps, and covers for feeding bottles may now be made with certain amounts of natural rubber. Natural rubber may likewise be used in varying amounts for a wide range of items essential in the rehabilitation of wounded veterans, including crutch pads, crutch tips, dilators, orthopedic sponge pads, prosthetic devices, rubber bands and cushions for artificial limbs, truss pads, vaccine cups, and oxygen tent canopies and face pieces.

Bladders for inflated sport equipment may now be made with 38% natural rubber, of which 60% must be guayule. This provision applies to basketballs, footballs, cageballs, punching bags, pushballs, soccer, volley, and water polo balls.

The list of industrial products for which more natural rubber has been authorized covers certain insulation compounds, vibration dampers and engine mounts, certain hard rubber products, and a number of items where rubber is needed to line equipment used in handling acids. Other important items for which natural rubber is permitted or greater amounts have been approved include belt splicing and repair material; cigar machine aprons; conveyer belt scrapers, screen diaphragms for papermaking equipment; street-sweeper belts; escalator handrails; steam, pile drive, sandblast, and divers' hose; rod or piston packing; steam valves; rubber dams for dental work; dental polishing tips and denture rubber.

In some cases where only synthetic rubber had been permitted for certain sponge and latex foam rubber products, specified amounts of natural rubber are now authorized, such as for mattresses, automobile seats, upholstery, and railroad car seat cushions.

Pointing out that the increased distribution of natural rubber results from cutbacks in military orders, WPB said that thus far no authoritative information has been received concerning actual availability of substantial quantities of natural rubber in the recently liberated areas in the Far East.

Advices of actual shipments have been received, and when the Rubber Committee of the Combined Raw Materials Board has allocated specific tonnage to the United States, WPB explained, it will then be possible to carry out the planned reconversion to natural rubber in many products that gave reasonable service in war time, but which need more natural rubber content to equal prewar quality.

This revision of R-1 also stipulates that imports of finished or semi-finished products containing natural rubber will be permitted, but the importer must furnish a certificate to the Collector of Customs indicating that the importation is in accordance with the import provisions of R 1.

Another new provision of the order permits chlorinated natural rubber to be used for binding natural rubber to metal in products listed in Table B of Appendix I. This rubber may be used only in certain end-products and in specific amounts as authorized in Table B.

Greater amounts of natural rubber will be permitted in the manufacture of 60 types of rubber footwear, the Civilian Production Administration announced November 15. The articles affected range from women's toe rubbers and children's arctics to firemen's boots; also included are men's dress rubbers and arctics and a wide variety of rubber-soled "tennis" shoes with canvas uppers. These new regulations appear in an amended edition of Appendix II to R-1, effective November 15. The additional amounts of natural rubber now authorized will permit the manufacture of better-quality products.

The authorization for increasing natural rubber consumption in types of footwear essential to health and for special occupational uses is in line with the CPA policy of allotting more natural rubber for products when needed for quality reasons. As the supply of natural rubber increases, CPA will take steps to restore the usage of natural rubber to the pattern that prevailed in the industry before the war.

Passenger-car tires 6.50 cross-section and larger may now be made with either high-tenacity rayon or cotton tire cord. The rubber specification for all passenger-car tires still remains S-3, (100% GR-S with 1.25% natural rubber throughout the tire figured on weight of total rubber hydrocarbon content).

This latest amendment also includes an increased allowance of natural rubber for small airplane tires and the addition of approximately 20 new tire sizes to the list of tires authorized for manufacture. The new tire sizes, chiefly special-purpose tires, such as earthmover, rock service and logger and traction, have been incorporated in Table B of List 8. To obtain quantity production of certain special-purpose tires, a number of sizes was not permitted during the war or was permitted only in minimum quantity on an appeal basis.

The synthetic construction for small airplane tires has been changed to permit 30% natural rubber. These tires formerly had to be made with but 10 to 20% natural rubber. The change involves less than one ton of natural rubber per month and will improve quality as well as lessen manufacturing problems.

Cold-cure natural rubber cements for use in repairing and reconditioning inner tubes may now be sold in container sizes up to and including one quart. Previously this repair material could be obtained only in quarter-pint containers.

R-1, moreover, now permits the manufacture of truck tires in either highway or mud-snow tread design in the same construction for both civilian and military use. Formerly the manufacture of mud-snow tread design was prohibited for civilian use in many sizes.

All of the manufacturing changes specified in the latest modification of R-1 represent permission to use a total of only 2,500 tons of additional natural rubber per year, or slightly more than 200 tons per month. Cancellations of military orders in the past two months more than offset this amount and permit the additional uses.

Amendment 1 to Appendix II after January 1 permits the use of Butyl for inner tubes for all passenger-car, small truck, and small tractor-implement tires. Until the new year, however, the use of Butyl in tube manufacture is restricted to inner tubes for military vehicles, certain large-size truck, bus, and tractor-implement tires, and passenger tires 6.50 and larger.

WPB, as of November 1, revoked Direction 21 — Rubber-Borne-Transportation Equipment and Facilities—Part 903—Delegations of Authority—and Supplementary Directive 1-N—Rationing of Rubber Footwear.

Rationing and Price Regulations Revised

Amendment 21 to MPR 149—Mechanical Rubber Goods—effective November 24, removes from the coverage of the regulation household mats and matting, kneeling pads, and household stair treads—usually sold by retailers. These items are now priced under MPR 188.

Reconversion provisions already in effect allowing industry-wide ceiling price increases for specified consumer durable goods under certain conditions have been extended to cover a limited number of mechanical rubber goods, by Amendment 22 to MPR 149. The extension, effective December 1, applies to mechanical goods whose 1944 production was one-half or less of their last representative period of peacetime production. Secondly, the reduced production must have resulted from government restrictions or from use of the manufacturing facilities for other war goods. The third condition is that, because of a change in government restrictions or in the needs of the war program, manufacturers generally are able to begin production again or to increase substantially the present production.

OPA said that most mechanicals have been produced in volumes equal to or greater than prewar volumes. Such products are not covered by Amendment 22. Those items covered represent a small number of products that have been in large part or wholly out of production since 1941, as rubber flooring or mats, sponge rubber products, and rubber-covered rolls.

Under the reconversion provisions, OPA may, by order, either at the request of an industry or by its own motion, establish new maximum prices that will represent normal costs, adjusted for subsequent changes in prices of materials and in factory wage rates, plus the industry's average peacetime profit margin.

The provisions require reasonable absorption by the distributive trades so that retail prices for reconversion goods will be as close as possible to 1942 levels.

Order 88 under 3 (e), GMPR, establishes maximum prices for rubber air mattresses and pillows made by Hodgman Rubber Co., Framingham, Mass.

Order 4647, MPR 188, sets ceilings for certain sink strainers and stopers, hot pads, castor cups, and bushings made by Pacific Moulded Products Co., 905 E. 59th St., Los Angeles 1, Calif.

Amendment 14, MPR 477—Sales of Rubber Heels and Soles in Shoe Factory and Home Replacement Trades—effective November 28, sets new ceilings for unpackaged Q2 (standard) grade heels and revises the maximum prices of unpackaged Q3 (competitive) grade heels at all levels of the home replacement trade. Such action was adopted to encourage the sale of the better-quality heels in this trade. Besides the quantity of Q4 (special competitive grade) heels in this trade is insufficient to meet the needs as a large amount of the normal supply has been diverted to the relatively more profitable shoe repair and shoe factory trades.

Amendment 1 to MPR 597—Ordinary Channel Black — effective November 28, adds to the coverage of the order the following premium brands of channel black: "Ex-cello X" produced by Imperial Oil & Gas Products Co.; "Uncompressed Blacks A" and "AA," Charles Eneu Johnson & Co.; "No. 242," Columbian Carbon Co.; "Black Pearls #78" and "#80" (dustless), "Monarch #78," and "Spheron C" and "I," Cabot Carbon Co.; "Dixie B" and "Kosmos B" and "3 X B," United Carbon Co.; "Extra Witco Uncompressed" and "Witco 270" and "R 20," Panhandle Carbon Co. For these premium brands a reseller's ceiling for the particular brand listed shall be his maximum price established under GMPR on May 11, 1942, plus the difference between the manufacturer's current and March, 1942, price per pound for the same brand in bags in carload lots.

RMPR 264—Vegetable Waxes and Beeswax—and all orders issued thereunder were suspended October 24.

Tire Orders Changed

Three changes have been made in manufacturers' and wholesalers' ceilings for bicycle tires and tubes, in Amendment 10 to MPR 435—New Bicycle Tires and Tubes—effective November 19. Retail ceilings are not altered by these changes, which follow:

1. Manufacturers' ceilings for the most popular-size standard-grade synthetic bicycle tube, 26 by 2.125, which represents approximately 80% of bicycle tubes produced, are increased 7¢ a pair. Other-size tubes are increased proportionately. Distributers absorb the increases. On the main-size tube, increased 7¢ a pair at the manufacturing level, wholesalers' ceilings are raised 4¢ a pair, requiring absorption of 3¢ a pair by wholesalers. As retail ceilings are unchanged, retailers must absorb the other 4¢. OPA said a study showed wholesalers and retailers could absorb these increases and still maintain a margin above their expense rate on sales. The increases are required by law to cover higher costs, OPA explained.

2. Increases of approximately 20% are granted in manufacturers' ceiling prices for various sizes of synthetic bicycle tire assemblies when sold to bicycle manufacturers. An assembly consists of two tires, two tubes, and two rim strips. These increases are similar to one granted July 5, 1945, on the principal size of these assemblies, which represents approximately 80% of all assemblies sold. That increase is now extended to two additional sizes of standard-grade assemblies and to different sizes of four other grades, DeLuxe, motor bike, lightweight, and premium. Manufacturers expect to resume production of these sizes and grades in the near future. Retail

ceilings for bicycles are not changed by this action. The increases are to cover higher costs and are mandatory under the Price Control Act, OPA said.

3. On manufacturers' sales of bicycle tires and tubes to brand owners, ceilings applicable on sales to jobbers will apply instead of three alternative methods previously in effect. The stipulation is made, however, that no ceilings may exceed the manufacturers' maximum price to his lowest class jobber on sales of his own brand. This action permits an increase in certain brand-owner purchase prices where such prices have been below the so-called low jobber deal.

Existing ceilings for sound used airplane tires will apply to airplane tires that have been recapped with airplane types of tread and declared surplus by the Armed Forces, according to Order 83 under Supplementary Order 94—Maximum Prices for Sales of Certain Newly Recapped Tires—effective November 14. The ceilings are in dollars-and-cents terms at retail for different sizes and plies; while for government agencies or wholesalers the ceilings will be 25% under the retail levels. The Reconstruction Finance Corp. proposes to sell a limited number of these recapped tires in the regular civilian channels.

SO 94, Revised Order 33, effective October 26, establishes maximum prices at which scrap whole pneumatic tire casings and scrap inner tubes may be sold by the War and Navy departments and the Department of Commerce of the United States. For the tire scrap the ceiling ranges from $14 a short ton, consuming center, Los Angeles, Calif., to $20, Akron, O. For the scrap inner tubes the ceiling is 6¢ a pound from all the consuming centers except Los Angeles where it is 5½¢ a pound.

Ceilings have been raised about 5.9% on prices that may be charged for splitting tires, according to Supplementary Service Regulation 66 to RMPR 165—Services—and Revocation of Order 46 under RMPR 165—both effective November 13. The increase followed a study of costs for this service, generally performed by "splitters" engaged by rubber reclaiming firms. The new maximum price is $15.88 a ton of tires split, compared with a ceiling of $15 generally prevailing under the previous March, 1942, "freeze." To encourage the continuance of this service, OPA allowed splitters to adjust prices to the new ceiling on orders performed after September 5, 1945. That adjustable pricing authority was withdrawn automatically when the new ceiling became effective.

The following orders were added last month to RMPR 528—Tires and Tubes, Recapping and Repairing, and Certain Repair Materials — setting retail maximum prices for the new products indicated: No. 68, four new sizes of synthetic rubber Waber Double Seal special-purpose truck and bus and airplane tubes, The Waber Co., Chicago, Ill.; No. 69, seven sizes of new Sure Grip Grader tires, Goodyear Tire & Rubber Co., Akron, O. Order 56 (August 20) was revoked November 20 because the prices of the tires covered—nine sizes of new combat and run-flat tires of cotton construction—should have been established at the same level as the regular ply highway tire for each size and not at the ceilings of off-the-road special service tires. In consequence the nine tires involved are now included in Revised Order No. 62, which establishes the maximum prices for 18 sizes of new combat and run-flat tires. Amendment 1 to Order 60 (September 10) removes from the order five sizes of combat and run-flat tires and transfers them to Revised Order No. 62 for the same reason as motivated the revocation of Order 56.

Amendment 111, RO 1A—Tires, Tubes, Recapping and Camelback—among other changes covers transfers to American Samoa.

Amendment 5, Rev. RO 1C—Tire Rationing Regulations for the Virgin Islands—covers a change relating to delivery of tires to certificate holders.

Passenger tire quotas for December total 2,500,000, the same as for each of the past six months. The December allocation of large-size truck tires also remains unchanged at 250,000. But the quota of small truck tires is 300,000, 50,000 less than the November allocation. This cut is required by heavy current requirements for tires in this category as original equipment on trucks being put into service promptly.

Production of passenger car tires increased sharply in the past few weeks and, barring work stoppages, is expected to attain the scheduled production goal of 11,000,000 tires in this quarter, the Office of Price Administration said.

Retention of the 2,500,000 tire quota in December—an increase, on the basis of seasonal demand—should enable holders of tire purchase certificates to find the tires they need, OPA said. The agency explained that during the summer, when demand was heaviest, quotas exceeded production slightly so that inventories were cut to such low levels in many communities that some certificate holders have been unable to fill their needs. This condition should be remedied in December.

With the continuation of the 2,500,000 passenger-tire quota, local boards should be able to supply the immediate tire needs of applicants who have no other means of getting to their jobs or performing them, OPA said. Besides the seasonal decline in demand is expected to be reflected by a reduction in the national backlog of unfilled applications in December.

The quota of large-size truck tires should be ample to meet eligible rationed demand because backlogs of unfilled applications for these tires are small now. The quota reduction of small-size truck tires for replacement needs, however, will force boards to screen applications for tires in this category carefully.

A tabulation of December quotas and reserves by tire types compared with November allotments follows:

Type of Tire	December Quotas: Quotas	Reserves	Total	November Quotas
Passenger & Motorcycle (Grade 1 new tires)	2,341,200	158,800	2,500,000	2,500,000
Trucks & Buses				
Size 7.50 or smaller	272,600	27,400	300,000	350,000
8.25 or larger	235,000	15,000	250,000	250,000

Rims Approved and Branded by The Tire & Rim Association, Inc.

Rim Size	Oct., 1945
15" & 16" D. C. Passenger	
16x4.00E	288,904
16x4.25E	8,741
16x4.50E	183,833
15x5.00E	58,523
15x5.00F	1,272
16x5.00F	9,640
15x5.50F	11,880
16x5.50F	8,258
16x6.00F	9,691
16x4.00E-Hump	31,911
15x4.50E-Hump	7,113
16x5-K	38,268
16x6L	25,834
15x6-½-L	390
17" & Over Passenger	
18x2.15B	1,271
Flat Base Truck	
20x3.75P	9,587
17x4.33R	1,259
20x4.33R	50,073
24x4.33R	409
20x5.00S	436,239
20x6.00T	41,325
20x7.33V	51,827
22x7.33V	6,694
24x7.33V	827
19x8.37V	562
20x8.37V	761
24x8.37V	2,909
20x10.00W	194
24x10.00W	1,520
Semi D. C. Truck	
16x4.50E	15,634
16x5.50F	18,493
Tractor & Implement	
12x3.00D	2,249
15x3.00D	13,591
16x3.00D	1,378
18x3.00D	1,521
19x3.00D	10,151
36x3.00D	299
20x4.50E	1,084
18x5.50F	5,389
20x5.50F	1,564
24x6.00S	5,783
36x6.00S	2,618
40x6.00S	175
24x8.00T	5,501
28x8.00T	2,451
32x8.00T	676
36x8.00T	851
W7-24	29
W8-24	4,425
W8-28	335
W8-32	1,559
W8-40	511
W10-28	1,786
W10-36	6,015
DW9-38	3,442
DW10-26	1,269
DW10-36	1,626
DW10-38	17,344
DW11-24	2,379
DW11-28	465
DW11-36	283
DW11-38	5,226
Cast	
24x15.00	79
TOTAL	1,425,896

Surplus Property Administration, Rubber Footwear Industry Advisory Committee, discussed problems in connection with the disposal of surplus rubber footwear at a recent meeting in Washington. The committee is one of the several formed to obtain the maximum participation of industry representatives in furnishing information, advice, and recommendations in connection with the formulation and execution of SPA policy. W. Oakley Cagney, chief, footwear branch, Office of Surplus Property, Department of Commerce, served as chairman of the meeting. Its members are J. J. Brady, United States Rubber Co., New York, N. Y.; Hugh Bullock, Tyer Rubber Co., Andover, Mass.; C. E. Little, Servus Rubber Co., Rock Island, Ill.; and Albert H. Wechsler, Converse Rubber Co., Malden, Mass. Members were of the opinion that most items of rubber footwear already declared surplus would not affect the industry and could be absorbed readily. It was felt, however, that future declarations of items in large supply might have a serious impact if thrown suddenly on the market. Prices, including discounts to wholesale and retail buyers, were considered, and a recommendation was made for consumer prices in line with the ceilings already established by the Office of Price Administration.

EASTERN AND SOUTHERN

Calco Plans New Units

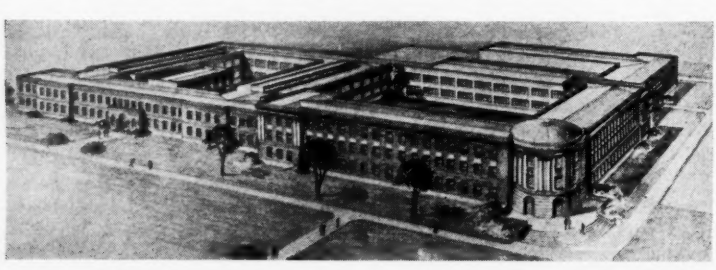
Calco Chemical Division, American Cyanamid Co., Bound Brook, N. J., has broken ground for the first units of its new research and technical sales service center, at Bound Brook. The center, when completed, will also include the general administration offices of the company. Present plans call for the immediate erection of the application and technical sales service laboratory units. The foundation for this structure will be laid at once, and the unit completed and ready for occupancy early next summer. This unit will become the new quarters for the pigment, paper and textile resin sections of the application laboratory and the technical sales offices for this group.

To provide adequate facilities for the rapidly expanding physics and physical chemical departments, construction of the east wing of the research section will be included in the first stage of the building program and will ultimately become a part of the general research unit. Later it is prosposed to erect the organic research section which will be a duplicate in size and layout of the physics building. When completed, the new research and technical sales service center will house all the research and sales application laboratories now located throughout the Bound Brook plant and at the pigment department, Newark, N. J. Provision has also been made for a cafeteria, library, and an auditorium designed to seat about 300 persons. The entire group of buildings will cover approximately six acres.

As part of the new expansion program instituted by Calco, a new manufacturing building is being erected within the plant proper to house the organic pigment manufacturing department, now at Newark. The inorganic pigment department, also in Newark, will be relocated at the new Willow Island, W. Va., plant. The transfer of operation and plant personnel from Newark must be completed by the end of 1946, since the Newark plant has been sold and must be vacated.

The Calco plant at Bound Brook, was begun in 1915 and during World War I became an important producer of coal-tar intermediates. Following the war, the Calco Chemical Co., as it was then known, entered the new field of dyestuffs manufacture. The company in 1928 was acquired by American Cyanamid. Today the Calco Chemical plant at Bound Brook covers approximately 500 acres. Here are produced dyes, drugs, textile resins, rubber chemicals, intermediates, and plastics. Calco also operates two plants at Newark: one occupied by the Heller & Merz division, manufacturing dyes for the paper industry; and the second operated by the Lake & Pigment department, producer of dyes and pigments for the linoleum, printing ink, paint, and varnish industries. Calco is also a producer of titanium dioxide, with plants at Piney River, Va., and Gloucester City, N. J.

Early this year Calco purchased 800 acres at Willow Island, near Parkersburg, W. Va., on which construction of a new plant has already been started. When completed, this plant will provide a location for the manufacture of new products developed in the research laboratories of the Cyanamid organization as well as by Calco's own research group. The Willow Island plant should be ready for initial production by the end of 1946.



Visual Plan of the New Calco Research and Technical Sales Service Center at Bound Brook, N. J.

General Aniline Making Koresin

Production of the German softener, Koresin, on a pilot-plant scale was announced by George W. Burpee, president of the General Aniline & Film Corp., New York, N. Y., late in October. Plans are being completed to meet the full commercial demand, and various rubber goods manufacturers are now experimenting with this product.

Mr. Burpee also disclosed that Koresin was first made in this country last spring after our armies had penetrated into Germany and had discovered that the Nazis were using a tackifier and softener which appeared to have far superior qualities to any softeners we had for fabricating synthetic rubber. The Rubber Reserve Co. obtained a brief description of the manufacturing process and of the properties of Koresin and on May 1 of this year turned over this information to the central research laboratory of the General Aniline & Film Corp., which had been engaged in various developments calling for the use of high-pressure and high-temperature reactions of acetylene. By May 9 the first samples of American-made Koresin were forwarded to the Akron Government Laboratory for evaluation. Four days later General Aniline had completed the first pilot-plant run on several hundred pounds of the new product. By May 25 the Government Evaluation Laboratory had approved the quality of the product, and General Aniline had shipped sizable quantities of Koresin to 27 rubber companies for further evaluation. Since then substantially the entire rubber industry in this country has been supplied with samples of Koresin for evaluation and testing.

"Our American-made product appears to be identical with the German Koresin and equally effective," Mr. Burpee said. "In view of the recent announcement of the Rubber Manufacturers Association that synthetic rubber has established itself permanently as a basic world raw material and that broader fields for its use and service are in sight, the American development of this special tackifier is of commercial and industrial significance. Chemically, Koresin is a synthetic resin, a tertiary butyl phenol-acetylene condensation product."

Frederick G. Schranz, an engineer with more than 40 years of practical industrial experience, has established his own office at 90 West Broadway, New York 7, N. Y., where he will serve as consultant engineer and manufacturers' representative. He will also deal in various kinds of machinery and equipment and will design, engineer, and supervise installations, particularly those of hydraulic and power tools. He will counsel on any shop or technical problem. For 30 years Mr. Schranz was affiliated with the old Southwark Foundry & Machine Co., which later became the Baldwin Southwark division of Baldwin Locomotive Works, Philadelphia, Pa. He served as vice president. Prior to this connection, he was for a decade head of the hydraulic engineering department of R. D. Wood & Co., Philadelphia. A graduate mechanical and electrical engineer, he has developed many outstanding designs of equipment for the metal, steel, rubber, plastics, and wood industries.

The Cofax Corp., manufacturer of Pax tape, has moved its plant, sales and purchasing departments, and business administration offices to 381 Sunrise Highway, Lynbrook, L. I., N. Y. Executive offices, however, continue at 50 E. 42nd St., New York 17, N. Y.

Hewitt Rubber Corp., Buffalo, N. Y., has named Adrian W. Smith manager of the Restfoam division, President Thomas Robins, Jr., announced last month. For the past five years Mr. Smith was executive assistant to the vice president and general manager of Curtiss-Wright Corp.'s airplane division and previously had been vice president of Dexter P. Rumsey & Co.

For more than a year Hewitt has been developing Restfoam (latex foam) products, concentrating attention on automotive, bus, and railroad seating, mattresses, furniture cushions, and similar items. Mr. Robins also revealed that the company already has received susbtantial contracts for Restfoam products and is negotiating with automobile manufacturers who plan to use the material in early models.

Hewitt is currently operating a latex foam manufacturing unit in its Buffalo Plant No. 2. The company recently bought a 12-acre plot containing manufacturing buildings with 112,000 square feet of floor space adjacent to Hewitt's main plant. Mr. Robins said that by March the company expects to have completed the installation of additional Restfoam production machinery in the newly acquired plant at a total cost of $750,000.

Edwin M. Perrin, advertising manager of the Hewitt subsidiary, Robins Conveyors, Passaic, N. J., since May, 1942, has been promoted to assistant manager of equipment sales. He will work directly with A. E. Conover, whose equipment sales department is supervised by H. Von Thaden, first vice president.

Packaging Convention

The Packaging Institute, Inc., 342 Madison Ave., New York, N. Y., held its seventh annual meeting at the Hotel Commodore, New York, November 26 and 27. Walton D. Lynch, vice president of the National Folding Box Co., was reelected president of the Institute, and at the same time it was announced that Major Albin Dearing has been named to act as executive head. W. O. Brewer, American Cyanamid Co., was also reelected vice president of the Institute and Mason T. Rogers of Dewy & Almy Chemical Co. is to serve as the head of the supplies division.

At the Supplies Division panel on November 26 Maj. E. L. Hobson, Office of Quartermaster General, Washington, D. C., discussing plastics packaging, declared that when business settles down to a peacetime economy, there will be decreases in cost due to increased production and greater competition which will make some of the now too-expensive materials practicable, and also that packages practically unknown in the prewar period will be made of the newer types of plastic materials and processing procedures, such as low-pressure laminating materials which will be of use in custom packaging, luxury beauty kits in replacing leather, and utilizing decorative effects with printed textile outer laminates.

To illustrate the expansion of the plastics industry during the war he said, "In 1939 a quarter of a billion pounds of plastic materials were produced annually. In 1944 slightly over three quarter billion pounds were being produced, and it is believed that over a billion pounds will be produced by the end of 1946."

Major Hobson went on to say that vinyl pastes which have been utilized in Germany for packaging of Buna have also been used in England for coating fabrics for packaging to achieve waterproofness and afford greater durability than with film packaging. The greatest bottleneck in reconversion is in equipment for conversion of raw materials to usable products; however he said he thought that by June, 1946, this situation would be remedied.

Relating the difficulties and problems of the adhesives industry, F. P. Bartlett of Union Paste Co., told of the advantages of the new technique being used by the adhesive formulater, the emulsion or suspension method which eliminates fire hazard, obnoxious solvent odors, and stringing and has a drying rate more fitting with most fabricating equipment. Besides, generally, much higher solids are obtainable and a more compatible adhesive film with paper can be laid down. He urged that machine designers become more familiar with the application of emulsion.

The subject of transparent films was taken up by Capt. W. H. Aiken, of the Office of Quartermaster General, Washington, who told of the many tests and experiments made by the Army to find the best film for the required use. He showed slides of graphs which charted various films and their properties. Manufacturers should make use of such data, he advised, in order to find which material best suits their needs. The speaker went on to tell of Saran which has almost perfect water resistance, but as yet no way to machine the material has been found.

W. H. Graebner, of Marathon Corp., who spoke on paper coatings and the implications thereof, emphasized the importance of evaluating the various coatings and their properties and selecting the one with the properties best suited for the required job.

On November 27 the topic, "From the users viewpoint what will the machinery manufacturer and the supplies manufacturer offer to make postwar production more satisfactory?" was taken up. E. F. Tomiska, of Western Electric Co., pointed out that the transition from wartime to peacetime packaging breaks down into two major phases: the extent to which substitutes will retain their position in the packaging of products forced into them by wartime shortages, and the extent to which packaging developments brought about by wartime necessities will have a place in the peacetime economy.

"The tremendous growth in self-service, labor conditions and intensified specialization" are what Walter J. Byrd, of Johnson & Johnson, termed as the "outstanding problems left the packaging industry by the war." With self-service so increased, attractive and durable packages with some part of the contents on display so that the customer will not be misled become necessary. With labor constituting 10 to 60% of manufacturing costs, most of the manual packaging operations will be eliminated.

"National and world competition coming back in the picture creates the need for research for packaging efficiency," he declared.

D. M. Brown, of American Chicle Co., said that he felt sound quality control is a necessity in postwar packaging. Specifications during the war provided for a much greater degree of protection. Though peacetime requirements will not be so severe, it is nonetheless important that quality and uniformity be adhered to.

President Lynch announced plans for an international packaging exposition to be held in New York early in 1947 in connection with National Packaging Week.

Erecting Plastics Laboratory

Hercules Powder Co., Inc., Wilmington, Del., will construct early next year a new plastics laboratory at its Parlin, N. J., plant, which will serve as headquarters for the company's development and research work on plastics, and where tests will be conducted on the three plastics materials—ethyl cellulose, cellulose acetate, and nitrocellulose—produced at Parlin and other cellulose products department plants. Chemists at the laboratory will work with the company's technical service men in developing new product applications and in helping solve production problems of customers. The building will centralize in one laboratory the chemical and mechanical development work being done at Parlin on plastics. R. L. Stern, chemical superintendent, will be in charge, with Walter Gloor as plastics supervisor.

The laboratory, with facilities for compounding finished plastics for testing, will be set up in such a way that customers who buy basic materials from Hercules can see new techniques applicable to their work demonstrated and can work with the laboratory chemists on their processing problems.

Plans include several constant-temperature rooms in which plastics qualities, such as flexibility, hardness, and tensile strength, can be tested under conditions specified by customers. Both cold and heat tests will be possible, with temperatures in the testing rooms ranging from minus 70° to plus 180° F. New mixing equipment used in making plastics for experimentation and a new drawing press for laminating plastics are included in the project. Production of a greater variety of molding powders for testing will be possible when the new laboratory is in operation.

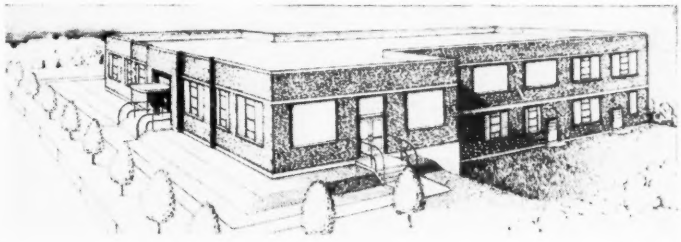
The building will be T-shaped, with the head of the T one story high, and the leg of the T two stories. Laboratories will be on both floors. Offices, a conference room, and high-temperature equipment will be on the second floor; while cold-storage rooms, electrical-equipment rooms, and a machine shop will be on the first floor. Dies and machinery for producing experimental molded plastics will be set in the machine shop. Walls will be tile-lined, and floors will be concrete. Air will be filtered to insure freedom from contamination by dust and dirt. All electrical equipment will be explosion-proof.

Charles H. Gant has been appointed manager of the Parlin, N. J., plant, to succeed Edward G. Crum, named assistant general manager of the cellulose products department.

Clark B. Kingery has been made assistant director of personnel of Hercules Powder. A member of the cellulose products department since 1925, Mr. Kingery has gained wide experience in the field of plant management and in the development and application of company personnel policies through his work as assistant manager of the Parlin plant from 1938 to 1944 and as manager of the Hopewell, Va., plant from 1944 until the present.

E. F. Hutton & Co., brokerage house, 61 Broadway, New York, N. Y., is expanding its commodities department because of the prospect of increasing public interest in commodity futures and the probability that several markets closed during the war will be reopened.

Heyden Chemical Corp., 393 Seventh Ave., New York 1, N. Y., has appointed N. P. Malin manager of the Far Eastern sales department. Mr. Malin, formerly export manager of Marshall Dill in San Francisco, Calif., is well known in the Far Eastern chemical trade and has traveled extensively in China, Japan, Philippines, and the East Indies.



Architect's Drawing of New Plastics Laboratory to Be Built at Parlin, N. J., by Hercules Powder Co.

Purchases Rayon Plant

To insure a steady supply of rayon tire cord for civilian tires, United States Rubber Co., Rockefeller Center, New York 20, N. Y., has purchased the government-built rayon processing plant at Scottsville, Va., for $1,837,500, according to President Herbert E. Smith. Built in 1944 at a cost of approximately $2,300,000, the plant employs 350 persons and is now turning out rayon cord at the rate of more than 1,900,000 pounds a month.

The rubber company becomes owner of the complete plant, including an ultra-modern brick building containing 125,500 square feet of floor space located on a 66-acre site, and textile machinery which includes 25 looms, 15,000 ply twisting spindles, and also 11,000 cable twisting spindles.

The Scottsville plant was built by the Defense Plant Corp. of the RFC to speed up the production of rayon cord for heavy-duty military tires. It has been operated under lease by U. S. Rubber, with O. L. Ward in charge as superintendent. Originally designed to produce 1,200,000 pounds of tire cord monthly, the plant is now exceeding that rate by more than 700,000 pounds a month as the result of new time-saving methods of cord manufacture instituted by the company.

The plant will continue to operate at capacity, with the present payroll of 350, Mr. Smith announced. The purchase increases to seven the number of textile mills owned by the rubber company. The Scottsville building is of advanced design throughout. Windowless except for the office, the plant is brightly lighted by fluorescent lights. Temperature and humidity control are maintained by a change of air every four to six minutes. In the building proper are located supply rooms, machine shop, rest rooms, kitchen, cafeteria, and a textile laboratory for testing and research. Machinery is set up for straight-line production. Rayon filament yarn on 1,000-pound beams is put into twisting machines at one end of the room. It is first plytwisted, then respooled, cable twisted and woven, and it comes out the other end as high-tenacity tire cord fabric.

Los Angeles Plant Modernization

A new rubber milling technique, which relieves operators of much of the heavy handling, will be installed as part of a postwar expansion program for the Los Angeles plant according to Factory Manager John M. Miller. This new method, designed by local engineers, calls for a three-tiered steel structure to house rubber milling and mixing machines in a vertical production flow. On the top floor rubber and mixing ingredients will be fed into the Banbury mixers which will be installed on the middle level. The mixed rubber from the Banbury will drop to the 84-inch mixing mills on the main floor. A battery of four Banbury mixers and eight 84-inch mills are involved in this rearrangement.

Engineers have also devised a new rubber cooling system synchronized with the streamlined mixing operations under the appropriation. A precise integration will be achieved by using a single power unit to operate the belt conveyer from the mills and the chain cooling conveyer which takes the rubber slabs on a 600 feet journey over three floors and back.

A continuous ribbon of milled rubber, three feet wide, will move on a belt from the 84-inch mixing mills to a cutting machine which will cut the rubber into six-foot slabs. These slabs then slide automatically on to arms connected with the chain cooling conveyer which moves slowly on its 1½-hour journey. By the time the slabs return, they will be cooled, ready for the next operation.

This almost automatic milling system is in efficient contrast to the old horizontal method and provides many advantages. Besides eliminating heavy handling and saving labor, the new method is cleaner than the old and saves rubber and other materials which dropped to the floor or were absorbed into the air.

The quality of the rubber in terms of tire wear will be enhanced because the more thorough cooling method will prevent overcuring and thus supply to the calenders and tire builders stock more uniform in quality.

According to Mr. Miller, this is the final phase of an expansion program which will increase the tire building capacity of the local plant 30% and make it one of the most efficient tire building units in the country.

Personnel Changes

U. S. Rubber also announced the following changes in its tire division covering the Pacific Coast. D. W. Walsh, sales manager for the U. S. Tires division stationed in New York, has been made Pacific Coast sales manager with headquarters at the Los Angeles plant; while G. R. McNear, who formerly held that post, has been transferred to New York to assist Howard N. Hawkes, assistant general manager of the tire division, in the overall sales activities of the division. W. H. Kneass has been named Pacific Coast divisional manager for the U. S. Tires division, with headquarters at Los Angeles; he had been manager of commercial merchandising at New York.

Henry G. Noss has been named manager of distributing branches for the Company. Formerly assistant manager, he succeeds Frederick W. Strong, who has retired. Mr. Noss has been with U. S. Rubber continuously, except for a period of military service in World War I, since 1912, when he started in the auditing department. After various assignments in other divisions of the company, Mr. Noss was made assistant supervisor of a division newly formed at the start of the war to handle sales of vitally needed war products. In 1942 he was made general assistant of this division and in 1944 was appointed assistant manager of distributing branches.

Walter D. Baldwin has been appointed sales manager of the U. S. Tires division, with headquarters at the general offices in Rockefeller Center, New York. A native of Eureka, Calif., Mr. Baldwin is a graduate of the University of California and joined the company as a salesman in its Spokane, Wash., branch in 1934. He was appointed district manager of the Salt Lake City branch in 1938 and two years later, district manager of Portland, Ore. branch. Transferred to New York in 1941, he became assistant sales manager of the Gillette tires division and a year later, sales manager. In 1944 he was named merchandising manager for the U. S. Tires division.

H. L. Kincade has been transferred to the New York general office to act as manager of camelback and repair materials for U. S. Tires. Noteworthy is the USCAP program of recapping, under which Mr. Kincade is establishing dealers as approved tire rebuilders. He has had a long experience in the company's production department, having joined the company in 1918. In 1935 he was transferred to the sales division.

In a move to improve service to U. S. Tire distributers, the opening of several new branches was announced last month together with other appointments rounding out the sales and service organization of the tire division. A new branch in Oklahoma City, at 101 N. W. 23rd St., has been opened, with James L. Grider district manager. The New Orleans branch has been established at 444 Canal St., and Olen D. Brazil has been appointed district manager of this branch. J. E. Kennedy, formerly farm tire manager at the general office in New York, has been named district manager of the Dallas branch. Effective December 1, a branch at Charlotte, N. C., will be established, with W. O. Boone as district manager. K. N. Carter, formerly at Columbus, O., where he represented the war products division of U. S. Rubber, has been made district manager of the San in the Straus-Frank Building in San Antonio.

John B. Tower, in charge of export activities of the company's war products division in Washington, D. C., has been returned to United States Rubber Export Co. as assistant to the vice president with headquarters in New York. Mr. Tower will continue to supervise the export activities of the company in Washington. A native of Washington, D. C., Mr. Tower is in his fortieth year with the rubber company, having started as a salesman in 1906 with Morgan & Wright, now the company's Detroit tire plant.

Col. B. J. Lemon, in charge of the rubber branch at the Office, Chief of Ordnance, Detroit, Mich., during the war, and a member of U. S. Rubber's tire development department, has been awarded the Legion of Merit for outstanding contributions to the development of synthetic tires for military use. The award was presented by Brig. General G. M. Wells, Commanding, Office, Chief of Ordnance, Detroit, in ceremonies at Ordnance headquarters, Union Guardian Bldg.

New Developments

Electrical wire insulated with natural rubber from latex is back on the civilian production list, according to A. S. Basil, chief engineer of the wire and cable division of U. S. Rubber. In resuming production of this type of wire, known by the trade name Laytex, the company will utilize natural rubber formerly set aside for the insulation of wire for the Armed Forces. During the war the Army and Navy used more than 1½ million miles of this wire, it was revealed. One of the most important postwar applications of Laytex wire is expected to be in the field of fire alarm, police signal, and traffic control cable for remodeling and expanding municipal signal systems, Mr. Basil said. The smaller diameter of the wire permits the addition of many new circuits without increasing the size of existing conduits.

U. S. Rubber also reported the development of a cigarette lighter wick that practically never requires trimming or replacement as the latest thing to come out of its textile research laboratories. Made of asbestos yarn, the new wick is tightly braided to prevent fraying and "blossoming" which frequently puts lighters out of operation. A small core of glass yarn provides improved capillary action for proper feeding of fluid.

Industrial solid tires of neoprene, said to reduce power consumption up to 60% compared with solid tires of present con-

struction, were scheduled by U. S. Rubber to go into production late last month. These new special-purpose tires are designed primarily for electric and gasoline powered trucks and manually operated material handling equipment, where minimum rolling resistance is a prime necessity.

The largest installation of rubber-lined tanks and pipes in the world is used in the production of the atomic bomb at Pasco, Wash., U. S. Rubber disclosed last month with permission of the War Department. More than 250 tons of rubber were used to line equipment for distilling and storing millions of gallons of water required in the process of harnessing nuclear energy, according to O. S. True, manager of the rubber company's tank lining department. The rubber lining project was completed between July and October, 1944, Mr. True stated. Most of the equipment was lined at the company's plants in Providence, R. I., and Detroit, Mich.

Six "iron lungs" were flown by special plane to Brussels to aid Belgian civilians stricken by infantile paralysis, the Belgian Economic Commission in Washington reported last month. These "iron lungs" included a new and improved rubber bellows designed in the Passaic, N. J., plant of U. S. Rubber only a few days before receipt of the Belgian order. To speed delivery of the new product, workman stayed at their jobs long after their normal working days, with the result that four bellows were turned out in less than 48 hours.

Guthrie Mitchell, an engineer and production superintendent of hose departments of the Manhattan Rubber Mfg. Division of Raybestos - Manhattan, Inc., Passaic, N. J., has, in his spare time, developed and built the Windjammer, a propeller driven automobile. The Windjammer requires no transmission, automatic or otherwise, since it uses a pusher propeller powered by a two-cylinder opposed, air-cooled motor built in Coventry, England, before the war. Mr. Mitchell used a Model A Ford cut-down frame and a shortened Ford steering gear. Coil springs suspend each wheel, and the brakes are assemblies taken from old motorcycles.

The Thirtieth National Hotel Exposition was held at the Hotel Commodore, New York, N. Y., on November 12 through 15. Elliott Howard, trade sales manager of Firestone Industrial Products Co., addressed the afternoon meeting on November 13 on "Velón and Foamex." He stated that mattresses and pillows of foamed latex, which retain their original shape, should be available to hotels shortly after the first of the year and that eventually it was hoped to sell the product in slab form in order that a householder may cut cushions in any desired shape for a reupholstering job. He said that Velón, a plastic thread, would have its most valuable use in scuffproof, water-resistant, and non-staining upholstery fabric and window screening; while multifilament Velón will be a strong competitor to nylon and rayon. Mr. Elliott explained how film-form plastic shower curtains can be easily mended with a solvent and a hot iron. Among exhibitors at the exposition were The Bolta Co., Lawrence, Mass., Carrier Corp., Syracuse, N. Y., E. I. du Pont de Nemours & Co., Inc., Wilmington, Del., Goodall Sanford Co., Inc., New York, and Wyandotte Chemicals Corp., Wyandotte, Mich.

Carl J. Wright

Wright Elected Vice President of General Atlas Carbon Co.

Carl J. Wright, general manager, General Atlas Carbon Co., pioneer producer of furnace blacks for rubber compounding, on November 16 was elected an officer of the corporation and will now serve as vice president and general manager.

The General Atlas Properties, for which Mr. Wright was general manager and agent, were acquired from the previous owners April 1, 1945, by the General Atlas Carbon Co., a Massachusetts corporation in which Godfrey L. Cabot, Inc., Boston, holds controlling interest. Mr. Wright continued as general manager under the new corporation.

Since 1922, Mr. Wright, as a member of the staff of Henry L. Doherty & Co., Inc., had been in charge of the development of the General Atlas process for producing semi-reenforcing furnace blacks. After graduation from Rensselaer Polytechnic Institute in 1913 with a degree of electrical engineer, Mr. Wright was employed as an engineer by the Denver Gas & Electric Co., a subsidiary of Cities Service Co. Until 1922 he was transferred frequently: first to New York, then to Glenwood, Ont., to Wichita, Kans., to Caney, Kans., to Toledo, O., to Washington, Pa. These transfers were connected with the work for Henry L. Doherty, generally on some engineering projects in which Mr. Doherty was personally interested. After 20 years at the New York headquarters of General Atlas, Mr. Wright moved to Pampa, Tex., site of the first General Atlas furnace black plant.

He is an ardent fresh water fisherman and a hobbyist capable of building his own split bamboo fly rods, or building remarkable inlay pictures from imported woods.

The National Sporting Goods Association will hold its 1946 convention at the Hotel New Yorker, New York, N. Y., February 3-8. Among the firms exhibiting are Atlantic Products Corp., Trenton, N. J.; Burke Golf Co., Newark, O.; Converse Rubber Co., Malden, Mass.; Hodgman Rubber Co., Framingham, Mass., Pennsylvania Rubber Co., Jeannette, Pa.; Seamless Rubber Co., New Haven, Conn.; W. J. Voit Rubber Corp., Los Angeles, Calif., and The Worthington Ball Co., Elyria, O.

Rubber Trade Association of New York, Inc., 15 William St., New York 5, N. Y., held its annual meeting on November 8 when the following were elected to serve as directors for the next three years: for dealers' group, Bancroft W. Henderson and David S. Kubie; brokers' and agents' group, Philip Billhardt. The directors remaining are: J. Louis, Herbert E. Meyer, Fred Pusinelli, Jacobus F. Frank, A. L. Grant, and G. Le Roy Scheinler. At the same time a 1946 nominating committee was elected consisting of R. S. Hamilton, Maurice Tingley, and J. C. Baldwin. Then on November 13 the board of directors unanimously reelected Mr. Scheinler chairman of the board and Mr. Frank treasurer and reappointed B. G. Davy secretary. R. D. Young continues as president of the Association.

Westinghouse Electric Corp., Pittsburgh 30, Pa., according to Chairman A. W. Robertson, is expanding its manufacturing facilities in "practically every division" to "increase production from 40 to 50% above prewar level."

The company last month announced the following changes in its Editorial Service. Hendley Blackmon has resigned as manager to join McGraw Hill Publishing Co. Pending the return of Lt. Carl Nagle, now on duty in the Pacific with the U. S. Navy, H. C. McDaniel will act as supervisor of Editorial Service and be responsible for the company's technical and trade magazine publicity activities.

The Baldwin Locomotive Works, Philadelphia 42, Pa., has appointed Robert G. Allen general sales manager, according to President Ralph Kelly. In March, 1945, Mr. Allen joined the Baldwin organization as general manager of Baldwin Southwark Division.

A. E. Powell and **Victor Golden** are now associated with the Pioneer Latex & Chemical Co., 10 Avenue B, Newark 5, N. J. Mr. Powell was formerly technical representative and Mr. Golden chief chemist of the rubber division of the Flintkote Co. Pioneer Latex will supply compounds of all types of latices including synthetic rubbers, resins, and natural rubber for use in coating, dipping, adhesives, and saturating work, and the new company is expected to be in operation about January, 1946.

Riverside & Dan River Cotton Mills, Inc., Danville, Va., has announced new finishes for cotton roving and yarns treated with various synthetic resins and other bonding agents. Improved physical construction of these yarns and their application to a greatly broadened field of commercial uses have also marked the year that has elapsed since these new processes were first made public by this company. Among the developments listed was belting cord, particularly suitable for automotive fan belts, which showed greatly increased strength and very considerable gains in running time of such belts in actual use.

Compounding Ingredients Price Changes

Aluminum Flake	*lb.*	$0.03
Captax	*lb.*	.4075/$0.4275
Cuprax	*lb.*	.60 / .62
Ethyl Selanac	*lb.*	1.60
Kalite	*ton*	26.00
Langford	*ton*	8.50
Pyrax A	*ton*	8.40

OHIO

Factory Formally Opens

S. W. Caywood, general manager of the international division, and T. B. Tomkinson, controller, respectively, of The B. F. Goodrich Co., Akron, represented Goodrich at the formal opening of the new Colombian tire factory, the Industria Colombiana de Llantas, at Bogota on October 11. The new plant was built under the direction of the Colombian Government, but Goodrich has been associated with the Colombian sponsors in supplying technical information about construction and operation of the plant. J. M. Robbins and C. E. Brunner, Goodrich technical advisers, have been in Bogota several months working with the Colombian officials.

The new plant will use the country's raw supplies of rubber and cotton to a large extent in its tire manufacture. The plant, the first tire factory in Colombia, expects to employ several hundred local workmen. It has an annual capacity of about 100,000 tires and tubes, sufficient to meet the country's own needs.

C. M. Stewart, since 1942 manager of automotive aviation sales in the Cleveland district, has been appointed general manager of Cia. Goodrich Cubana, an associate Goodrich company in Havana. The plant is small, employing about 300 men and three women, and has a 200-tire-a-day capacity, enough to supply the needs of the island.

James A. Windram has been made manager of the St. Louis district of the industrial products division, succeeding George Livermore, district manager for the last three years, who is retiring from the company after service of 30 years, all in the industrial products field. Mr. Windram joined Goodrich's industrial products sales division in 1932 and since 1943 had been a sales representative in the St. Louis district.

M. J. Way has been appointed sales manager of accessories and repair materials in the associated tire and accessory division and will manage the sale of Miller accessories and repair materials. He succeeds E. A. Schneider, resigned. Mr. Way, a graduate of Ohio State University, came to Goodrich in 1926 and has since been engaged in sales.

R. W. Kuykendall, former manager of the Goodrich store in Enid, Okla., has been appointed special farm tire representative of the company and will devote most of his time to Goodrich's central division in the Midwest, where a large percentage of the nation's farm tires are used. Mr. Kuykendall started his company career in the Oklahoma City offices, was a salesman in the Kansas City district for eight years, and then named manager of the Enid store. He became farm tire representative in the Kansas City district and held that post until the war, when he resumed managership at Enid.

New Goodrich Items

A new line of spark plugs including 11 types for commercial use, manufactured and distributed under its own brand name, has been announced by the Goodrich company, which declared that the line was released to the public only after months of research and testing. Featured is a pretesting program which guarantees that every plug will render the service for which it is designed, the company says.

A new carbon-dioxide hand fire extinguisher with unique design and quick operating features developed during the war has been announced by the Goodrich company. Made to meet the full approval of fire underwriters, the container holds four pounds of carbon dioxide and comes with a carrying handle and control button designed for fast operation. It can be carried in one hand, with the thumb of that hand operating the push button. A horn swivel quickly raises or lowers as needed, remaining in lower position when attached to the wall rack furnished with each extinguisher, together with a quick release chain.

The heaviest single load ever moved on pneumatic tires, 300 tons of equipment used for a secret military project, was carried on a huge trailer having 64 wheels. Each wheel was shod with a large military truck tire made by the Goodrich company. The giant trailer is more than 39 feet long, nearly 17 feet wide, and weighs 73 tons. the 18-ply, 14.00 by 24-inch tires, a special desert type, were made of synthetic rubber and rayon cord; each casing weighed 220 pounds. The wheels on the trailer were mounted in eight rows with eight tires in each row inflated at 39 pounds' air pressure. At this pressure the trailer moved a load of 300 tons a distance of 30 miles over a temporary sandy road at a rate of three miles an hour, with a deflection of 3/32-inch on the main members. Goodrich engineers assert that with a tire pressure of 90 pounds each, this trailer could easily transport a load of 556 tons over an improved road at a speed of one mile an hour.

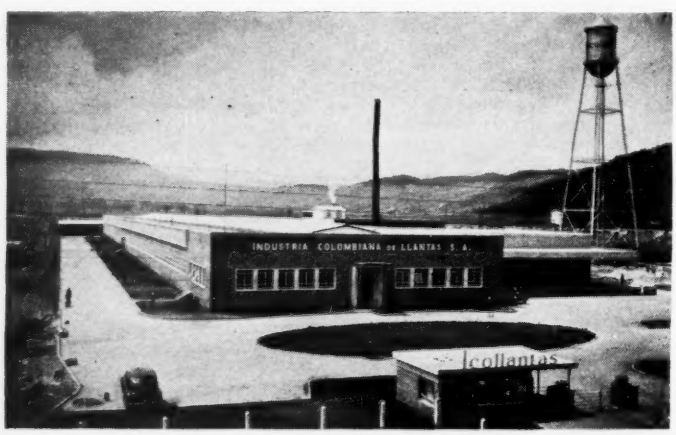
Forecast on Farm Tires

A speed-up of the trend toward mechanized equipment on American farms will mean an annual demand for nearly 250,000 new tractors for the first five postwar years —about 10% higher than the average for the last five prewar years—it was forecast November 13 by James J. Newman, Goodrich vice president, who based his estimates on a survey of farm-vehicle tire sales prospects made by his company's business research department. He cited the pronounced swing that had begun before the war to rubber tires for all farm vehicles, saying that by 1941, 96% of all wheel-type tractors made in this country were rubber-tired, and that all wheel-type tractors in the postwar period will roll on rubber. From 1921 to 1944, he revealed the number of draft animals on American farms declined from 24 million to 12 million, while in the same period the number of farm tractors rose from 400,000 to about 2,100,000.

The peak years for new tractor production will be 1946, 1947, and 1948, Mr. Newman predicted. In the following two years, after the war-caused backlog of demand has been met, tractor output may subside somewhat, but so far as the market for tractor tires is concerned, this decline will likely be offset by mounting replacement demands in 1949 and 1950.

He explained that replacement tire sales had not been a large item before the war because rubber-tired tractors had been of relatively recent vintage then; the first ones appeared in 1932. Tractor tire sales for 1939-41 ran about 78% original equipment and 22% replacements. Production of many types of farm implements, equipped almost exclusively with rubber tires, is anticipated as part of the postwar revival in farm machinery. Following are industry-averaged estimates for combined tractor and implement tire requirements for the first three postwar years.

Year	Units of Original Equipment	Replacement Units	Total
1946	2,123,000	1,095,000	3,218,000
1947	2,070,000	1,050,000	3,120,000
1948	1,850,000	907,000	2,757,000



First Tire Factory in Colombia, S. A.

Capt. Robert L. Baumgardner, back from service with the Army Air Forces in the South Pacific, last month joined the public relations and advertising staff of Norman E. Malone, business consultant, Akron. Captain Baumgardner at one time had been with the advertising and sales departments of Seiberling Rubber Co., Barberton.

The Clark Mfg. Co., manufacturer of steam specialties, 1830 E. 38th St., Cleveland 14, has appointed Charles W. Stewart vice president in charge of sales. In this capacity Mr. Stewart will work closely with Vice President John L. Mainwaring, who, while continuing his many contacts with the sales force and distributing system, will devote an increasing amount of his attention to engineering research and to product development and application. For the past 19 years Mr. Stewart had been associated with Hoffman Specialty Co., Indianapolis, Ind., most recently as vice president in charge of sales.

Goodyear's Visual Merchandising Laboratories

A new scientific approach to the field of merchandising was unveiled by the Goodyear Tire & Rubber Co. in Akron, on October 30 and 31, in the form of Visual Merchandising Laboratories designed for the benefit of the company's independent tire dealers. The new laboratories are operated by the dealer store planning and display department of the company and were opened on the above dates for a visit by leading business and merchandising writers.

E. J. Thomas, president, and J. E. Mayl, vice president of the Goodyear company, addressed the visitors at lunch on October 30, and R. S. Wilson, also a Goodyear vice president, spoke at a banquet held in the Mayflower Hotel on the evening of the same day. P. W. Litchfield, chairman of the Goodyear board, was the speaker at the luncheon on October 31.

There are seven fundamental phases in the Visual Merchandising Laboratory's approach to simplified modern merchandising. Summarized, they are: product and package design; store design and colors; fixture and equipment layouts; store layout; scientific interior display arrangement; window-display installation, and display materials and methods of placing.

Goodyear dealers who utilize the new laboratory's facilities are enabled to do so without any recourse to their imaginations or to mere photographs. The laboratories incorporate three full-size stores, complete with fixtures, products, exterior identification, and other factors. One model is that of a service station. Another is a small tire-dealer establishment, and the third is a large tire-dealer establishment. A feature of the laboratories permits visiting Goodyear tire dealers to reorganize, modernize and increase the efficiency of their existing store layouts with the aid of the laboratory staff and with utilization of miniatures of store equipment and fixtures.

Goodyear officials announced that facilities of the laboratories will be offered likewise to dealers through the mails, with the dealers providing as many facts as possible for projection on scale models and for subsequent recommendations.

Expansion of Goodyear's chemical products division to handle postwar demands was announced last month by C. P. Joslyn, division manager, who predicted a gigantic civilian demand for plastics and coatings, builders' supplies and flooring, Airfoam and Pliofilm, the latter in packaging and wearing apparel. Assistants to Mr. Joslyn are E. E. Ellies, mechanical engineer with experience in development work, and Herman R. Theis, former assistant director of Goodyear research, who also is manager of the plastics and coatings department. Other department managers are Howard D. Herbert, Airfoam sales; Otto C. Pahline, builder's supply and flooring; and A. F. Landefeld, Pliofilm sales. In the Pliofilm sales department A. B. Clunan is in charge of the direct packaging organization. Reporting to him are W. J. O'Keefe, New York; J. B. Post, Chicago; E. D. Beadle, Los Angeles; and R. J. Buskirk, Atlanta, all in charge of district sales offices. In the builders' supply and flooring department A. W. Biggs acts as assistant manager.

Henry E. Carroll, who recently returned to Akron after nearly two years as personnel manager and then plant superintendent of the Goodyear factory in Woonsocket, R. I., has been named personnel manager of the company's tire plant in Java. Mr. Carroll last month completed a quarter-century with the company and received a diamond studded pin and a cash award.

Goodyear, effective December 1, appointed E. T. Ruffner plant manager of its Jackson, Mich., plant to succeed R. E. Lee, head of the plant since 1941 and with the company since 1927, who has been transferred to Akron in charge of the plant planning and methods division. Mr. Ruffner, who joined Goodyear in 1917, has held several executive posts including superintendent of the Java plant (1934-1940), superintendent of Plant 1 at Akron, and plant manager of the Topeka, Kans., plant.

Crepe soles of synthetic rubber were made available to the nation's shoe industry by Goodyear at the opening, November 5, of the Boston Victory Shoe Show at the Hotel Statler. Known as Goodyear Chem-crepe, the product is available in wine and coffee colors and is said to be equal to prewar crepe soles in both wearing and comfort qualities. H. L. Post, manager of Goodyear's shoe products division, said that exhaustive tests made on the synthetic crepe before its introduction to the market proved it ideal for sport and walking shoes. It will hold its shape better than natural crepe, Mr. Post stated, and is as light in weight. Goodyear, he added, will be ready to go into a wide-scale production on the new crepe within 45 days, and it will be appearing soon thereafter in shoe stores from coast-to-coast.

Goodyear once again is making the giant balloons for the Thanksgiving Day Parade of R. H. Macy & Co., Inc., New York, N. Y. Suspended during the war, the event is being resumed this year. Goodyear balloon specialties include an enormous Hallowe'en pumpkin and a "triple-decker" ice cream cone 44 feet high.

General Tire Purchases Pennsylvania Rubber Co.

The General Tire & Rubber Co., Akron, has bought the Pennsylvania Rubber Co., Jeannette, Pa., it was announced November 1 in a joint statement by William O'Neil and Howard W. Jordan, respective presidents of the two corporations. General Tire purchased the Jeannette plant from the DuPuy Estate, but will retain the officers, headed by Mr. Jordan, the personnel and the sales, purchasing, merchandising, and personnel policies, Mr. O'Neil said. Liquidation of the old company and formation of a new corporation bearing the same name are the next steps to be taken. The well-established Pennsylvania line of tires will be continued, as will the dealer organization and the private-brand business.

General is fifth among the tire companies of the nation. Sales last year were in excess of $74,000,000. Pennsylvania Rubber was seventh, with sales of more than $25,000,000.

Pennsylvania Rubber Co. was established in Erie in 1898 and the following year moved to Jeannette. It was started by Herbert DuPuy, and since his death in 1929 stock control has been vested in the DuPuy Estate, which held 99% of the shares. The Jeannette plant has more than 475,000 square feet of floor space and employs 2,000 persons. Capacity has been doubled during the 4½ years under the presidency of Mr. Jordan. The company makes tires and tubes, camelback for retreading, repair materals and patches, is the largest single producer of tennis balls, makes shuttlecocks and rubber athletic goods, including basketballs, footballs, and volley balls, and also markets batteries and bicycle tires through its strong dealer organization. Pennsylvania Rubber introduced the vacuum cup tire. As soon as government restrictions are lifted, and it is again possible to build a premium tire, the company will make available to car owners the new Silent Vacuum Cup Tire, which has been developed by Pennsylvania engineers in war-time research.

The company is one of the constituent members of the Copolymer Corp., which operates a synthetic rubber plant at Baton Rouge, La., and Mr. Jordan is treasurer of that corporation.

During the war the Pennsylvania company not only filled heavy government orders for tires, but made many other products from rubber and metals. Since V-J Day reconversion has been rapid. As orders were cancelled for gas mask cannisters, submarine battery jars, pontoons, molded goods, and other military items, they were replaced immediately by tire, tube, and accessory production so that the sales figures were maintained at a constant level.

General was begun in 1915 by Mr. O'Neil, who previously had been a Fire-

One of the Stores in Goodyear's Visual Merchandising Laboratories

stone dealer in Kansas City. W. E. Fouse, vice president and treasurer of the company, was his Kansas City partner.

Ten years ago General established a mechanical goods factory in Wabash, Ind. A cotton mill was acquired at Barnesville, Ga. In 1943, General took over management of a government-owned synthetic rubber plant at Baytown, Tex. Since then the company has built a tire plant in Waco, Tex., bought 25% of the Mansfield Rubber Co. stock, acquired control of the Aerojet Engineering Co., Pasadena, Calif., where jet-assisted takeoff rockets are made for military and commercial airplanes, and greatly expanded tire building facilities in Akron. General also purchased outright the Yankee Network of New England, a chain of 22 stations, of which five are owned by the Network.

James D. Perley has been named director of industrial relations for all plants, according to C. J. Jahant, vice president of General Tire. A native of Durham, N. H., Mr. Perley was educated at Penn State, later taking graduate work at the University of Pennsylvania. In 1933 he became assistant employment manager of the Chase Brass Co., Waterbury, Conn., in 1935 he went to work for the Connecticut State employment service, a year later joined the Seth Thomas Clock Co., Thomaston, Conn., as personnel director, and in 1939 became personnel director for the National Dairy Co. affiliate at Philadelphia. There he remained until entering the service in 1941, where he spent his first three years of duty in the Coast Artillery. His last 18 months in the service were on production work in connection with the army supply program.

H. L. Barnes, who managed industrial relations at Akron for the past eleven years, has resigned to enter the labor relations field as a consultant.

School for Territory Representatives

To train special territory representatives in postwar merchandising plans of the factory, a series of sales schools is being conducted in Akron by Dan Collins, manager of the dealer relations department. Sixteen men attended the first session: T. A. Vensel, J. T. Heverly, of the Akron branch; V. G. Durand, W. J. Karley, W. F. McNurney, R. B. Murphy, Chicago; P. M. Smith, S. D. McPeak, J. P. Lawrence, C. W. Cawley, Detroit; D. C. Tinker, R. M. Jackson, Cincinnati; O. W. Tucker, Memphis; Paul J. Reid, Dallas; Howard Smith, D. P. Wilson, of the Export company. Classes were held under the supervision of the various department heads. Previously the 16 men had undergone five weeks' intensive training at the branches.

Karl Dalsky, truck tire department manager, discussed all phases of the truck tire industry and General's plans for merchandising truck tires in the 12 months ahead. John Ink, manager of the sales operations department, outlined plans for assistance to the fast-growing General distributer organization; while J. E. Powers, manager of the passenger-tire sales department, gave details of the new tire General will unveil as soon as restrictions are lifted on natural rubber, and premium tires again may be manufactured.

In a specially constructed model tire recapping and repair shop, E. C. Leach discussed the advantages of the Kraft system and predicted a continuation of recapping even when new tires are available in large numbers. The advertising and sales promotion program was presented by R. H. Harrington, department manager.

Plans of the battery department also were given, by S. S. Berry, who heads that department, and George Wolf detailed the program for time payment sales.

Merchandise display as a vital part of any retail dealer's program was discussed by C. Dean Lampman, designer of many stores for distributers.

Tire service was outlined by Joseph Fouché, and Robert Moran conducted a tour through the plant to acquaint the representatives with factory manufacturing procedures.

Final event was a talk by L. A. McQueen, vice president in charge of sales, who told of General's plans for continuing expansion into allied fields and of expanded tire production facilities.

The next school will be held this month and will be followed in January with a session for the Pacific Coast representatives.

Firestone's Velón Introduced to the Fashion World

Presented for the first time, on October 31, was evening wear of Velón, a new plastic yarn developed during the war by The Firestone Tire & Rubber Co., Akron, O. This fashion show, well attended by the press and style leaders and makers, took place at the Ritz Carlton Hotel, New York, N. Y., at which Roger Firestone, an executive of the rubber company and a son of its founder, was host and principal speaker, briefly narrating the history and advantages of this "miracle yarn."

The exquisite ivory brocade used in the formal apparel and made of the Velón yarn is the product of Hafner Associates, Inc., New York. Models displayed were: a swathed turban and drawstring bag, designed by Sally Victor, in Hafner brocade woven of Velón and gold lamé in a spray pattern in dainty pastels; a Sally Victor lantern turban and matching sandals by I. Miller, also of the brocade, but in a leaf pattern; another Sally Victor turban, this time bow draped, Miller platform sandals, and a tunic created by Pauline Trigere, all of gold dotted brocade woven of Velón and gold lamé; a cocktail suit by Troy-Stix in the leaf-pattern brocade; and a dinner gown fashioned by Suzanne-Augustine of the spray-pattern fabric.

Velón is strictly a man-made fiber. Besides its use as a yarn to be made into fabrics, it is also available as screening or as sheeting. Its many uses include window screens, draperies, upholstery, seat coverings, rainwear, radio grills, belts, fishing nets, awnings, handbags, luggage, golf bags, tubing, gun cases, beach bags and accessories, cables, brush bristles, ropes, and twines, as well as the beautiful fabrics unveiled at the fashion show.

Trigere Tunic and Miller Sandals of Hafner Brocade Made of Firestone's Velón, the New Plastic Yarn

During the war years every pound of Velón produced by Firestone was conscripted by the War Department for screening, which, it is reported, played an important role in reducing tropical diseases by shielding troops from disease-carrying insects. Velón was also said to have withstood better than any other material the punishing climatic conditions of the jungle.

This same colorful plastic can be woven into multifilament textiles of floss-like fineness and softness. Besides spots of any nature—mud, paint, ink, liquor—can be quickly removed by a damp cloth, soap and water, or an ordinary cleaning fluid, without injury to the fabric. Laboratory tests, furthermore, reveal that Velon fabrics are odorless, non-toxic, unaffected by perspiration, and not irritating to the skin. Another most important advantage of the material is that the color of Velón is compounded into the original formula and becomes an integral part of the filament itself, thus making it sunfast and fadeproof. It can be made up in deep, rich, primary colors or in unlimited pastel shades and brilliant hues. It can be transparent, translucent, opalescent, opaque, or a mixture of any or all of them. With the tensile strength of the stretched filaments said to be equal to that of steel, Velón fabrics are practically scuff-proof and wearproof. This plastic, moreover, does not attract moths, termites, or rodents. It sheds water, neither rusts nor tarnishes, and is not combustible.

Following the parade of the models, F. J. Groton, technical director at the Firestone plant at Paterson, N. J., surrounded by samples of Velón screening and sheeting in brilliant hues, contrasting with the pastels of the evening brocades, demonstrated some of the plastic's qualities. He quickly removed ink and beet juice stains by dipping the fabric into soapy water and then rinsing in clear water, told how lipstick and similar smears can be removed, and answered the very numerous questions hurled at him by an interested audience.

Firestone's Liberia Production

According to a story from Akron which appeared in the *New York Herald Tribune* for November 19, John W. Thomas, chairman of the Firestone Tire & Rubber Co., reported that the 1945 rubber production of this company's plantations in Liberia, in operation throughout the war, will total 41,000,000 pounds (18,700 long tons) and in 1946 is expected to reach 44,000,000 pounds (20,000 long tons).

"Few American enterprises abroad have proved to be as beneficial to the entire nation as have the Firestone rubber plantations in Liberia," Mr. Thomas declared. "Throughout the war these plantations operated without interruption as the only Allied source of supply of concentrated natural latex. During 1944 they produced 36,000,000 pounds (16,350 long tons) of rubber, which was a substantial contribution to the United Nations' then dwindling pool of natural rubber.

"Today, with political repercussions of the fall of Japan and mechanical delays blocking the flow of natural rubber from the Far East, Liberia continues to help meet urgent demands."

Research work with high-yielding strains of rubber trees has been carried on con-

tinuously in Liberia and should eventually result in obtaining 1,000 to 1,500 pounds an acre a year, it was said. The Firestone company holds leases on 200,000 acres of land for plantation use, of which 80,000 acres have been cleared and planted with about 10,000,000 rubber trees ranging in age from one year to 17 years. Production from the younger, maturing trees will substantially augment the present output.

Seventy per cent. of the 55,758 acres of producing trees was under pressure tapping in varying degrees during the war as part of emergency measures taken in order to obtain the highest possible yields from the plantations, Mr. Thomas said. Normal tapping will be restored when the present natural rubber shortage has been met.

"Operations of the Firestone plantations are carried on by 25,000 native workers under the supervision of 150 staff men," Mr. Thomas reported. "Their success is the product of nearly twenty years' experience, during which the development of the country for rubber growing has moved hand in hand with its social and economic progress. Firestone takes great pride in having been an important factor in both developments."

New Tire Demounter

A new truck tire demounting unit that can separate the most tightly fitting tire from its rim with a force as great as 25,000 pounds, yet is so easily operated that it can be handled by a girl, has been developed by the Firestone company. Production of the new tool, which will save thousands of man-hours of labor hitherto required in prying stubbornly wedged, rust-sealed truck tire beads from rim flanges, is now under way at one of the Firestone steel products plants in Akron. Adjustable to truck tire rims 15 to 24 inches in diameter, the tool consists of a base on which the mounted tire is laid, and an eight-legged cast-iron "spider" which, beneath a three-armed jack, hangs from a central screw shaft above. The "spider," adjustable to different bead diameters, has curved, wedged feet with hinged "ankles" that act as levers against the tire bead.

Also announced by the Firestone company is the production of a compact, ingeniously designed aircraft brake with a "built-in cooling system." Excessive temperature, with its attendant problems of rapid wear and distortion of brake parts, leakage of hydraulic rubber parts, and tire and tube deterioration, has been overcome in the development of this new brake, it was reported.

Industrial Rayon Corp.'s continuous process for the manufacture of viscose rayon yarn, including high-tenacity Tyron for tire cord fabric, and the history of the development of this process are related in a forthcoming book by Joseph V. Sherman, entitled "The New Fibers," to be published by D. Van Nostrand Co., Inc., New York, N. Y. It is pointed out that because of the versatility of Industrial Rayon's continuous process, it was possible to change from the production of other types of rayon yarn to high-tenacity yarn by merely changing the gear ratio of two of the ten thread advancing reels serving each position on the continuous process machine and making a few other minor adjustments. The use of high-frequency heating for the purpose of twist-setting is also included in the account of the wartime production of rayon tire cord.

Heinsen's

George E. Popp

Phillips Petroleum Co., Philblack Division, First Central Tower Bldg., Akron, has appointed George E. Popp technical representative for its western territory with headquarters at the Phillips office, 3666 Archer Ave., Chicago, Ill. His territory will extend from the Indiana-Ohio state line, west to the Rocky Mountains, including western Michigan, Alabama, and Texas. Mr. Popp, a native of Colorado, attended Colorado University Extension and was employed by the Gates Rubber Co., Denver, for 14 years, gaining diversified experience in the factory, reclaim, and technical division prior to becoming manager of the tire, tube, and repair materials technical division in 1938. In February, 1943, he left Gates to become production superintendent of the Inland Rubber Corp., Chicago.

With the opening of the new office, Philblack stocks will be warehoused in Chicago for direct sale to all L.C.L. accounts in the Midwest, and the Philblack Division will be able to give improved technical sales service to the rubber industry in this area.

A. W. Oakleaf is technical representative for Philblack in the eastern territory with headquarters at Akron.

The Association of American Battery Manufacturers, Inc., 2706 Tower Bldg., Akron, on November 8-9 held its annual convention at the Stevens Hotel, Chicago, Ill., when the largest attendance on record for the Association elected the following executives to take office January 1: president, C. E. Murray, Willard Storage Battery Co.; first vice president, Lester Perrine, Perrine Quality Products Corp.; second vice president, A. J. Minch, Auto-Lite Battery Corp.; secretary, A. H. Daggett, National Battery Co.; treasurer, L. A. Doughty, Carlile & Doughty, Inc.; directors, E. T. Foote, Globe-Union, Inc., B. F. Morris, Thomas A. Edison, Inc., A. J. Baracree, Am-plus Storage Battery Co., H. E. Nye, Delco-Remy Division, Walton Smith, States Battery Co., C. L. Feldtkeller, Solar Corp., G. U. Pickering, Vitalic Battery Co., Inc., G. W. Douglas, Douglas Battery Mfg. Co. Also, recognizing his service for five years as president of the Association and many years as a director, the Association conferred the distinctive honor of president emeritus upon L. B. F. Raycroft, who will retire early in 1946 from The Electric Storage Battery Co.

The B. F. Goodrich Chemical Co., Rose Bldg., Cleveland, has made Robert P. Kenney, formerly manager of international service, manager of international sales. Until his recent promotion he had been in charge of technical service for the company's foreign business and all Lend-Lease shipments and now heads a foreign sales organization supplying resins, plastics, reclaimed rubber, and chemicals to export markets. Before joining Goodrich Chemical, Mr. Kenney had been chief of the vinyl resins unit, War Production Board, Washington.

The Fairmount Tool & Forging Co., 10611 Quincy Ave., Cleveland 6, has appointed Ernest Spuhler general sales manager. He has come up from the ranks, having had many years of experience both in factory and office.

NEW ENGLAND

The Norwalk Tire & Rubber Co., Norwalk, Conn., recently announced that R. P. Painter is now in charge of its chemical laboratory. Prior to joining Norwalk and since 1942, Mr. Painter was with the Navy Department as supervisor of the rubber laboratory at the Naval Air Experimental Station, U. S. Navy Yard, Philadelphia, Pa. His prior connection had been with Mansfield Tire & Rubber Co., Mansfield, O., where he had been assistant to the chief chemist from 1935 to 1942.

Paul D. Zottu, 95 Country Club Rd., Newton Centre, Mass., formerly chief engineer of the Thermex division, Girdler Corp., Louisville, Ky., has entered the field of consulting industrial electronic engineering and offers to industrial users and equipment manufacturers a consulting service in the field of high-frequency induction and dielectric heating, specializing in applications, equipment and component design and equipment selection. Mr. Zottu has a background of more than twenty years of training and experience in the electronic field. He is also a fellow of the Institute of Radio Engineers; a member of the American Physical Society, American Association for the Advancement of Science, and Society of the Plastics Industry; chairman of the technical committee on industrial electronics, I.R.E., and of the committee on frequency allocations of S.P.I.; and a member of the committee on industrial heating applications of R.T.P.B. and of the induction and dielectric heating committee, A.I.E.E.

Seamless Rubber Co., New Haven, Conn., has appointed as sales manager of its sporting goods division Edward J. Casey, former West Coast representative and for four years with the Office of the Rubber Director in Washington, D. C. He will also supervise bathing wear sales and will have as aide Miss J. L. Broderick, who had been handling sporting goods sales since the death of Joseph Bennitt. Besides Raymond A. Ames has signed with the company to handle druggists' sundries, sporting goods, bathing wear, and industrial tape as representative in the Central States territory, with headquarters at 53 W. Jackson Blvd., Chicago, Ill.

MIDWEST

Tracks and Vehicle Suspensions

Ordnance Department, U. S. Army through the Office, Chief of Ordnance, Detroit, Mich., recently reported on wartime developments by the Ordnance Department on track and vehicle suspensions such as the track widening program which had the aim of improving the flotation and tractive characteristics of tracks for combat vehicles. In all of these developments the Ordnance Department made the initial layouts or formulated the characteristics, and the detailing and construction of the pilot models were accomplished by various manufacturing companies.

For medium tanks, extended end connectors interchangeable with standard medium tank connectors were developed in collaboration with Inland Mfg. Division of General Motors and the Chrysler Corp., it was stated. Also the horizontal volute spring suspension with 23-inch wide T80 tracks, which represents new improved suspensions incorporating shock absorbers and wide tracks to give marked vehicle performance improvement through wide tracks, better gun platform, and improved crew comfort, were developed in collaboration with Chrysler on suspension and Burgess-Norton Mfg. Co., Ohio Rubber Co., and Tuscon Steel Co. for the T80 track.

In connection with light tanks, it was mentioned that the standard 11⅝-inch wide, light tank track developed during 1933-34, and the first track in the world to incorporate a successful rubber bushing for track pins, was manufactured by Firestone, Goodyear, Goodrich, U. S. Rubber, Inland, and Burgess-Norton.

Skelly Oil Co., Kansas City, Mo., last month announced that Comm. A. Ernest MacGee, officer in charge of the chemistry section of the research and standards branch of the U. S. Navy Bureau of Ships during the war, has returned to Skelly as head of the solvents department. Dr. MacGee also was chairman of the laboratory committee which was in charge of various aspects of the Navy Bureau's administration of the laboratories and the direction of certain research and development projects.

Bjorksten Laboratories, firm of industrial research chemists, 185 N. Wabash Ave., Chicago 1, Ill., has signed up as senior organic chemist William I. Harber, formerly with Witco Chemical Co.

The Protectoseal Co., Chicago 8, Ill., has appointed John W. Mock sales manager in charge of distribution of Protectoseal safety devices for handling and storing hazardous liquids. For seven years after graduating from Wooster College in 1927, Mr. Mock was with the DeVilbiss Co., Toledo, O., in various capacities. Then he moved to the Federal Electric Co., Chicago, as a specialty salesman and during the five years he was there assisted in teaching classes in salesmanship at Northwestern University. From 1939 until recently, he was sales manager at the Turner Brass Works, Sycamore, Ill.

Giffels & Vallet, Inc., engineer of Detroit, Mich., has been retained by the Sheller Mfg. Co., Portland, Ind., to design the expansion of its plant, which manufactures rubber steering wheels. Present capacity of 6,000 steering wheels a day will be increased to 15,000 a day by this new expansion. The plant layout will be streamlined, and some additional equipment installed. Giffels & Vallet has also contracted to modernize the plant of Gutta Percha, Ltd., in Toronto, Ont., Canada.

OBITUARY

Ben Strauss, Cleveland

Victor I. Montenyohl

Victor I. Montenyohl

VICTOR I. MONTENYOHL, former president of the International B. F. Goodrich Corp., Akron, O., died of a heart attack on October 27, in Mexico City. Cremation followed the next day.

Mr. Montenyohl, who was born in Akron, May 12, 1889, received his education in Akron schools and business college. He joined the B. F. Goodrich Co. on June 21, 1907, as a stenographer in the credit department. In 1920 he was made assistant treasurer, and treasurer in 1927. He became a director in 1928 and was elected vice-president in 1940, which position he retained until his retirement in June, 1942, because of ill health. He had also been Goodrich head of the Philadelphia Rubber Works Co., and up until he retired he was responsible for the development of Koroseal and chemical sales and traffic divisions of the Goodrich company.

He leaves a wife, a son, a daughter and two sisters.

George A. Dorman

GEORGE A. DORMAN, former rubber man, died in his home in New York, N. Y., October 30. Mr. Dorman began his career in the rubber world with the Keystone Tire & Rubber Corp. of which he was president from 1924 to 1929. He then went into the tire business for himself until 1932, when he became affiliated with the NRA as tire-code authority of New York City. Then in 1936 he joined the Martin Custom Made Tires Corp. as the treasurer and secretary, but left the rubber business in 1941 to become treasurer and secretary of the Cole Machinery Mfg. Corp., where he remained until his death.

Mr. Dorman was born in New York on December 25, 1888, and was educated in local schools. He was a member of the Masons, Carlton City Club, and the Tire Dealers Association.

Funeral services were held in New York on October 31, and burial followed at Mount Zion Cemetery in Queens.

He leaves a wife, a son and a daughter.

Pierre A. Cady

AFTER a long illness Pierre A. Cady, 54, manager of laboratories at The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., Passaic, N. J., died at a New York hospital on October 31. Funeral services were held November 2 at the First Presbyterian Church, Passaic.

Mr. Cady had been with Manhattan 29 years and before becoming manager of laboratories he had been at different times manager of the compound and calender, and V-belt departments. He was instrumental in developing many of Manhattan's processes and products. Before joining Manhattan the deceased had been with the Combination Rubber Co., Bloomfield, N. J., and The Hodgman Rubber Co., Tuckahoe, N. Y.

During the First World War, Mr. Cady served in the Army's Chemical Warfare Service, specializing in the development of gas masks. He had attended Columbia College of Engineering.

Mr. Cady is survived by his wife, two sons, and a daughter.

R. H. Comley

FROM abroad comes word of the death, on October 13 after a short illness, of Rowland H. Comley, joint managing director of The Avon India Rubber Co., Ltd., Melksham, Wilts., England, and 1945 president of the Federation of British Rubber & Allied Manufacturers' Associations. He was also a member of the Councils of the Tyre Manufacturers' Conference, The Society of Motor Manufacturers & Traders, and the Motor Trade Association and was a Fellow of the Incorporated Sales Managers' Association.

Mr. Comley began his business career in 1906 and was with The Sirdar Rubber Co. when it was absorbed by the Avon company in 1916. Following service in World War I, the deceased returned to the Melksham factory and subsequently was made manager of the branch at Newcastle. Later he became director of sales and in 1942 was elected to the board and named joint managing director.

CANADA

Report on Polymer Corp.

Total cost of the Polymer Corp., synthetic rubber plant at Sarnia, Ont., to date was given as $50,826,001 in a report tabled in the House of Commons at Ottawa, Ont., recently by George McIlraith, parliamentary assistant to Hon. C. D. Howe,

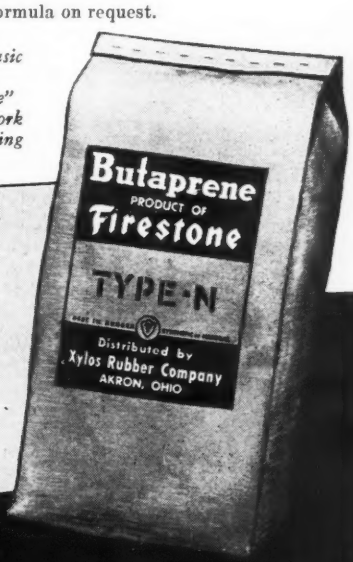
(*Continued on page* 440)

WANT a synthetic that molds with good-looking, rich, smooth sheen? Then specify Butaprene N! Your product will come from the mold with a beautiful, high gloss; practically ready for packing. No lacquer, spraying or polishing is necessary; finishing operations are reduced to a bare minimum.

And your product not only looks better with Butaprene N, it *is* better; for perfect moldability is only one of the many desirable properties of these versatile Butaprene polymers. Compression set is unusually low —only 14%*; oil and fuel resistance remarkably high. They function well in blistering heat or sub-zero cold; are ideal for gaskets, sleeves, packings, hose and similar parts operating in gasoline, hydraulic fluids or lubricating oils. For complete chart showing all the properties of the Butaprene N synthetics write XYLOS RUBBER COMPANY, AKRON 1, OHIO.

*ASTM Method B; formula on request.

For the best in music listen to the "Voice of Firestone" over N. B. C. Network every Monday evening



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THE SYNTHETIC RUBBER OF A THOUSAND USES

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Patents and Trade Marks

APPLICATION

United States

2,384,925. **Elastic Cushioning Means in a Vehicle Suspension.** R. N. Janeway, Detroit, assignor to Railroad Rolling Stock Patents Corp., Highland Park, both in Mich.

2,385,045. **Resilient Packing Ring for Shock-Absorbing Struts.** J. F. Wallace, University Heights, assignor to Cleveland Pneumatic Tool Co., Cleveland, both in O.

2,385,191. **For an Ignition System, an Elbow Connector Having a Shield Lined with Insulating Material, a Central Opening in the Lining, at Each End of Which Is a Resilient Terminal Member.** H. E. Brunelle, Jr., Schenectady, N. Y. assignor to General Electric Co., a corporation of N. Y.

2,385,215. **Safety Wheel Including a Pneumatic Tire Attached to the Main Rim, a Solid Rubber Tire Attached to a Secondary Rim, and a Signaling Device.** A. Park MacDicken, Seattle, Wash.

2,385,257. **Tube of Elasticized Rubber Hydrochloride Film for Packaging a Meat Loaf.** C. J. Cavallito, Rensselaer, N. Y., assignor to Wingfoot Corp., Akron, O.

2,385,453. **Flexible Self-Laying Vehicle Track.** C. W. Leguillon, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,385,463. **Valve Assembly Including Valve Means with a Rigid Core Having a Sleeve of Resilient Material.** A. J. Penick, Houston, Tex.

2,385,486. **In Forming Thermoplastic Sheets of Non-Uniform Thickness, the Use of a Cell Formed of Two Resilient Sheets of Material.** W. F. Bartoe, Hulmeville, and W. R. Speck, Langhorne, assignors to Rohm & Haas Co., Philadelphia, all in Pa.

2,385,490. **Brush with Units Formed of Soft Resilient Sheet Material Rolled into a Spiral Scroll.** E. Bernheim, New York, N. Y.

2,385,523. **Thermoplastic Cement to Attach Outsoles to Shoes.** H. E. Marasco, Swampscott, assignor to Compo Shoe Machinery Corp., Boston, both in Mass.

2,385,544. **In a Molding Device, a Tank across the Opening of Which Is a Resilient Flexible Member to Be Used in Conjunction with a Mold to Shape Material.** L. B. Salisbury, La Crescenta, Calif.

2,385,554. **In Making Prewelt Shoes, the Use of Thermoplastic Adhesive,** M. G. Stratton, Weston, assignor to Compo Shoe Machinery Corp., Boston, both in Mass.

2,385,562. **Fabric Screen Carrying a Film of Vinyl-Halide-Vinyl-Acetate Copolymer, Used for Making a Printing Stencil.** A. Baczewski,New York, N. Y.

2,385,635. **In an Antishimmy Device for Aircraft Landing Gear Including a Fluid Carrying Casing and a Control Piston, Fluid Sealing Means Consisting of a Pair of Slotted Strip Members Formed of Resilient Material.** Le R. F. Maurer, assignor to Bell Aircraft Corp., both of Buffalo, N. Y.

2,385,662. **Elastic Sheet Material Arranged about the Leading Edge of a Propeller Blade, as Deicing Means.** B. Vonnegut, Boston, Mass., assignor to Research Corp., New York, N. Y.

2,385,754. **Gasket of Deformable Material in a Seal for Pressure Vessels.** H. D. Baker, assignor to Chemical Construction Co., both of New York, N. Y.

2,385,759. **Mounting System Including Plates with Rubber between.** R. C. Henshaw, assignor to Lord Mfg. Co., both of Erie, Pa.

2,385,769. **Wringer Mechanism.** A. W. Altorfer, Peoria, Ill.

2,385,816. **Sealing Closure.** C. P. Krupp, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,385,847. **Tapered Resilient Body as Vacuum Release Stopper for Vacuum Bottles.** A. Skar, Minneapolis, Minn.

2,385,857. **Strips of Resilient Material as Cushioning Device for Radiation Detectors.** G. Herzog, Houston, Tex., assignor to Texas Co., New York, N. Y.

2,385,867. **Members of Resilient Material in a Throat Microphone.** J. M. Kuhlik, assignor to H. B. Kuhlik, both of Brooklyn, N. Y.

2,385,870. **Compressible and Expansible Cushioning Body Formed of Resilient Fibers of a Synthetic Thermoplastic Material.** W. B. Lashar, Fairfield, and R. F. Warren, Jr., Stratford, both in Conn.

2,385,876. **Colostomy Apparatus.** G. Moorehead, Ottawa, Ont., Canada.

2,385,941. **Seal Construction.** N. S. Reynolds, St. Louis, Mo.

2,385,995. **Undergarment Having a Section of Relatively Strong Elastic Material to Support the Abdomen of the Wearer.** A. R. Kneibler, assignor to Cooper's Inc., both of Kenosha, Wis.

2,386,000. **In Combination, an Electrical Appliance, a Flexible, Insulated Conductor Cord Electrically Connected to Its Terminals, and as Strain Relief and Reinforcement for This Cord, a Thin-Walled, Bell-Shaped, Sleeve Member of Resilient Material.** D. D. McQuiston, Richmond, Ind., assignor to Belden Mfg. Co., a corporation of Ill.

2,386,017. **In a Universal Joint, a Housing Member Having a Recess in Which Is Seated a Rubber Ring.** A. Venditty, Detroit, Mich., assignor to Thompson Products Inc., Cleveland, O.

2,386,086. **In a Reeling Apparatus Including a Reel with a Winding Drum for Storing a Line, an Inner Member Extending therethrough, and a Sleeve within the Reel, a Body of Rubber-Like Material between Sleeve and Inner Member.** J. D. Beebe, Silver Lake, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,386,151. **Rubber Sealing Ring in a Window Frame Structure.** G. Trautvetter, Jenkintown, assignor to Heintz Mfg. Co., Philadelphia, both in Pa.

2,386,463. **Resilient Mounting.** H. H. Hile, Riverside, Conn., assignor to United States Rubber Co., New York, N. Y.

2,386,466. **Metallic Conductor, Insulated with a Layer of a Resinous Organo-Silicon Oxide Composition.** J. F. Hyde, assignor to Corning Glass Works, both in Corning, N. Y.

2,386,474. **Wringer.** W. L. Kauffman, assignor to Lovell Mfg. Co., both of Erie, Pa.

2,386,478. **In a Yieldable Torque Transmitting Element, Driving Members and a Rubber Collar on Each Member.** H. T. Kraft, assignor to General Tire & Rubber Co., both of Akron, O.

2,386,496. **In a Seal, a Centrally Apertured Cup and a Packing Ring of Resiliently Compressible Material in the Cup.** H. L. Northup, assignor to Chicago Rawhide Mfg., both of Chicago, Ill.

2,386,502. **Rubber Surfaces in a Material for Absorbing the Vibration from Panels, Etc.** P. G. Iteik, assignor to General Tire & Rubber Co., both of Akron, O.

2,386,578. **Apparatus to Form Laminated Molded Structures Including a Flexible, Impervious Bag within Which Are Continued a Form, a Support for the Form, and a Flexible, Elastic Sheet Secured to the Support and Extending over the Form.** E. L. Vidal, Washington, D. C., assignor to Vidal Corp., a corporation of Del.

2,386,583. **A Textile Machine Unit Adapted for Drafting Fibers Having a Surface Layer of a Resilient Composition of Acrylic Nitrile and Butadiene Copolymer in Which Are Dispersed Fine Particles of Granular Rubber Substance.** H. M. Bacon, assignor to Dayton Rubber Mfg. Co., both if Dayton, O.

2,386,610. **Frictional Mechanism.** W. H. Hunter, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,386,668. **In a Double-Acting Double-Ended Pressure Differential Operated Motor a Piston Having a Disk-Shaped Body Member of Metal and a Flexible Annulus of Synthetic Rubber Bonded to its Periphery.** R. M. Douglas, Alpena, Mich., and R. S. Huyck, assignors to Bendix Aviation Corp., both of South Bend, Ind.

Dominion of Canada

430,211. **For an Electric Motor, a Braking Element Including a Rubber Brake Shoe.** W. G. Grimes, Urbana, O., U. S. A.

430,307. **A Fibrous Sheet Impregnated with a Gell Including a Bodied Drying Oil and Rubber Chloride.** Vellumoid Co., Worcester, Mass., assignee of L. H. Hills, Lancaster, Pa., U. S. A.

430,328. **Low Density Cellular Insulating Material from a Cellulose Derivative and Polymerized Resin.** C. Dreyfus, assignee of C. I. Haney, both of New York, N. Y., and M. E. Martin, Cumberland, Md., both in the U. S. A.

430,486. **In a Vehicle Wheel Tread, an Annular Rim Having a Wide Tread Surface, a Plurality of Pneumatic Annular Shaped Tire Shoes, and Inflatable Tubes in the Shoes.** O. C. Schmitz, Golva, N. D., U. S. A.

430,529. **A Resistance Element Including Non-Insulated Electrical Resistance Wires and Threads of Relatively Soft Deformable Non-Metallic Plastic Material Interwoven with and Separating and Insulating the Resistance Wires.** B. Greening Wire Co., Ltd., assignee of J. W. Galloway, both of Hamilton, Ont.

430,530. **Self-Sealing Fuel Tank.** Hunt & Winterbotham Ltd., Cam, assignee of E. V. Giles, Dursley, both in Gloucestershire, England.

430,576. **An Article Formed Entirely of Hard Rubber Having a Tensile Strength of from 1,000 to 9,000 Pounds per Square Inch and an Elongation from about 1 to 80%; the Article Has High Resistance to Impact.** Joseph Stokes Rubber Co., Ltd., Welland, Ont., assignee of Joseph Stokes Rubber Co., Inc., Trenton, N. J., assignee of E. R. Laning, Philadelphia, Pa., both in the U. S. A.

430,599 **Thermal Insulating Material of Ligno-Cellulose Fibers Treated with a Waterproofing Agent from the Class of Bituminous Asphalt and of Solids of Rubber Latex.** Wood Conversion Co., St. Paul, assignee of C. C. Heritage, Cloquet, both in Minn., U. S. A.

430,605. **Hose Coupling for Vacuum Cleaners, Including a Resilient Clamping Ring of Elastic Material.** Landers, Frary & Clark, assignee of O. M. Anderson, both of New Britain, Conn., U. S. A.

430,656. **In a Method of Evacuating and Filling Vessels, the Use of an Exhaust Rubber in an Exhaust Head, and a Rubber Tube Connection Adjacent the Head.** Canadian Westinghouse Co., Ltd., Hamilton, Ont., assignee of L. D. Lockwood, Madison, and D. Mullan, Kearny, both in N. J., U. S. A.

430,671. **The Combination with a Plate Having an Opening therein and Covering therefor, of an Attaching Device Including a Stud Which Extends through an Apertured Socket of Elastic Flastic Material.** Duffy Mfg. Co., assignee of R. A. Boersma, both of Holland, Mich., U. S. A.

430,707. **A Firm, Low-Density Heat Insulation Material Consisting of Discrete Particles of a Regenerated Cellulose Having a Cellular Structure and Having as Binding Agent a Phenol-Formaldehyde Resin.** C. Dreyfus, New York, N. Y., assignee of C. I. Haney, and M. E. Martin, both of Cumberland, Md., both in the U. S. A.

United Kingdom

571,528. **Protective Coatings on Rubber Articles.** B. F. Goodrich Co.

571,723. **Tread Units for Endless Tracks of Vehicles.** F. E. Burgess.

571,730. **Adhesive Tapes or Sheets.** A. H. Stevens. (Minnesota Mining & Mfg. Co.)

571,846. **Shock-Absorbing Connections between Relatively Movable Parts, More Particularly in Resilient Wheels.** J. M. MacLean.

572,000. **Gas-Tight Articulated Joints for the Envelopes of Electron Discharge Devices.** Standard Telephones & Cables, Ltd., and R. N. Hall.

572,033. **Self-Sealing Fuel Tanks.** Hawker Aircraft, Ltd., and R F. H. D. Coxwell.

572,048. **Road Vehicle Tires.** D. S. Kennedy.

PROCESS

United States

2,384,936. **Woven Elastic Fabric.** S. C. Lilley, Hamden, and E. E. Foster, Southport, both in Conn., assignors to United Elastic Corp., Easthampton, Mass.

2,384,951. **Producing Trim Panels by Flocking Adhesively Coated Fabric.** J. R. Millar, Reno, Nev., assignor to National Automotive Fibers, Inc., Detroit, Mich.

2,385,318. **Articles from Polymeric Vinylidene Chloride.** R. M. Wiley, assignor to Dow Chemical Co., both of Midland, Mich.

2,385,389. **Composite Hose Structure.** G. Toepper and J. F. P. Farrar, assignors to Chicago Metal Hose Corp., all of Maywood, Ill.

2,385,460. **Insulating Electrical Apparatus.** M. Omansky, Brookline, Mass., assignor by mesne assignments to Jefferson Electrical Co., Bellwood, Ill.

2,385,486. **Thermoplastic Sheets of Non-Uniform Thickness.** W. F. Bartoe, Hulmeville, and W. R. Speck, Langhorne, assignors to Rohm & Haas Co., Philadelphia, all in Pa.

2,385,921. **Forming an Adherent Cellular Layer of Plastic on a Glass Surface.** J. W. Jordan, Port Allegheny, assignor to Pittsburgh Corning Corp., Allegheny County, both in Pa.

2,386,634. **Electrodeposition of an Insulating Layer of an Elastomer and Finely Divided Refractory Material on to a Flexible Electrical Conductor.** P. Robinson, Williamstown, assignor to Sprague Electric Co., North Adams, both in Mass.

2,386,666. **Thread-Like Structure of a Rubber Hydrohalide.** R. P. Dinsmore, assignor to Wingfoot Corp., both of Akron, O.

Dominion of Canada

430,252. **Course Filaments from a Synthetic Linear Condensation Polymer. Canadian Industries, Ltd.,** Montreal, P. Q., assignee of **R. T.** Fields, Arlington, N. J., U. S. A.

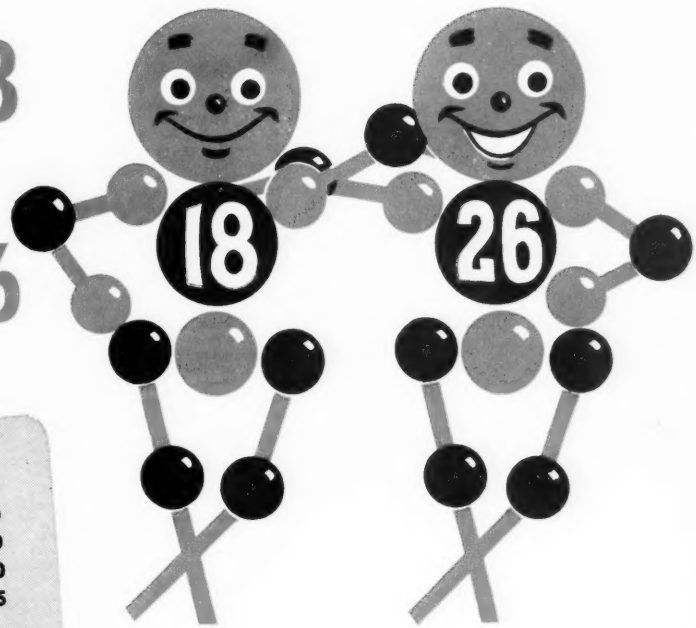
430,329. **Thermoplastic Cellular Material. H.** Dreyfus, London, assignee of **W. I. Taylor,** Spondon, both in England.

430,397. **Resin-Bearing Fibrous Pulp Article.** Canal National Bank of Portland. **Trustee, Port-**

A GOOD TEAM TO SOLVE MANY PROBLEMS...

Perbunan 18 AND Perbunan 26

SYNTHETIC RUBBER



RECIPE:

No. 8625-1-2	
Perbunan	100.0
Zinc Oxide	5.0
Stearic Acid	1.0
Medium Thermal Black	150.0
Altax	1.0
Sulfur	1.5

COMPARISON

PHYSICAL PROPERTIES:	PERBUNAN 18	PERBUNAN 26
Tear Test ASTM D624-44 at Room Temperature	315	350
Compression Set ASTM D395-4OT Constant Load (Method A) 22 hours at 158° F.	9.1	6.4
30% Constant Deflection (Method B) 22 hours at 158° F.	19.8	17.1
70 hours at 212° F.	59.5	59.3
Hardness and Stress Strain Properties ASTM D314-39 and D412-41 Cured 60 minutes at 287° F. Original:		
Shore Hardness	64	72
Tensile psi	1775	1870
Elongation at Break per cent	325	300
Modulus; psi at 300% Elongation	1675	1870
Aged 70 hours at 212° F. Shore Hardness	80	83
Tensile psi	2055	1955
Elongation at Break per cent	215	200
Aged 70 hours at 212° F. in ASTM Test Oil Number 3 Shore Hardness	38	58
Tensile psi	1500	2235
Elongation at Break per cent	345	370
Volume Increase per cent	35.2	17.4
Aged 70 hours at 300° F. in ASTM Test Oil No. 1 Shore Hardness	57	68
Tensile psi	1260	1795
Elongation at Break per cent	175	150
Volume Increase per cent	4.5	0.9

THIS COMPARISON OF PERBUNAN 18 WITH PERBUNAN 26 in a highly loaded compound highlights the properties which make Perbunan 18 important to you. Perbunan 18 can be compounded to have tensile, hardness, compression set and tear values similar to those which can be obtained with Perbunan 26. But, in addition, Perbunan 18 has unique properties which expand the horizon for the engineering uses of rubber by providing:

1. Good flexibility at very low temperatures.
2. Moderate swell even in high aniline lubricating oil.

A gasket or seal made from Perbunan 18 would have a wider temperature range of serviceability and just enough volume increase to insure against leakage and to make a secure joint.

PERBUNAN 18 is the same top-notch engineering material as PERBUNAN 26 . . . choose the one of this versatile team that will help you solve your problem.

The Stanco rubber technologist knows how to develop rubber parts from Perbunan 18, keeping in sight the cost competition factor! These men are anxious to help with tough problems. Don't hesitate to get in touch with the office nearest you.

PERBUNAN
REG. U. S. PAT. OFF.

THE SYNTHETIC RUBBER THAT RESISTS OIL, COLD, HEAT AND TIME

STANCO DISTRIBUTORS, INC., 26 Broadway, New York 4, N. Y.; First Central Tower, 106 So. Main St., Akron 8, Ohio; 75 East Wacker Drive, Chicago 1, Illinois. West Coast Representatives—H. M. Royal Inc., 4814 Loma Vista Avenue, Los Angeles 11, California. Warehouse stocks in New Jersey, Illinois, California and Louisiana.

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land, assignee of Keyes Fiber Co., assignee of E. E. Sawyer, both of Waterville, both in Me., U. S. A.

430,466. **Artificial Textile Materials from a Synthetic Thermoplastic Highly Polymeric Fiber-Forming Fluid Substance.** H. Dreyfus, London, England.

430,467. **Filaments, Fibers, and Like Materials from a Filament-Forming Synthetic Polymer Dissolved in an Organic Solvent.** H. Dreyfus, London, England.

430,517. **Textile Fibers from Vinyl Resins.** Carbide & Carbon Chemicals, Ltd., Toronto, Ont., assignee of E. W. Rugeley, T. A. Feild, Jr., and J. F. Conlon, all of Charleston, W. Va., U. S. A.

430,648. **Electric Heating and Working Method for Thermoplastics.** Arc Mfg. Co., Ltd., assignee of W. J. Jarrard, M. R. Moritz, and H. P. Zade, all of London, England

430,696. **Coating the Surface of a Material with a Continuous Film of an Organic Film-Forming Material.** Sylvania Industrial Corp., Fredericksburg, Va., assignee of C. S. Francis, Jr., West Harwich, Mass., both in the U. S. A.

United Kingdom

571,568. **Molding Boxes from Laminations of Felted Fibrous Materials Impregnated with Synthetic Resins.** Ebonestos Industries, Ltd., and A. Amigo.

571,730. **Adhesive Tapes and Sheets.** A. H. Stevens. (Minnesota Mining & Mfg. Co.)

571,941. **Attaching a Molded Plastic Nose or Cap to a Shot or Shell.** C. T. Gould.

572,009. **Drying Extruded Tubing.** British Thomson-Houston Co.

CHEMICAL

United States

2,384,846. **Resinous Material from the Reaction Product of Glycerine and Fatty Acids Heated with Maleic Anhydride.** C. G. Moore, River Forest, Ill., assignor to Glidden Co., Cleveland, O.

2,384,848. **Dispersions of Ethylene Polymers.** F. T. Peters, assignor to E. I. du Pont de Nemours & Co., Inc., both of Wilmington, Del.

2,384,871. **Obtaining Raised Fabrics by Treating Fibers with an Intermediate Resin, Subjecting this Fabric to a Raising Operation, and Then Converting the Intermediate Resin into the Insoluble Form.** C. P. Atkinson, Baildon, assignor to Courtaulds, Ltd., London, England.

2,384,876. **New Product Obtained by Mixing a Natural, Synthetic, Scrap, or Reclaimed Rubber with an Organic Sulpho Phosphine Halide Having Halogen Directly Linked to the Phosphorous Atom, and Heating the Mixture.** T. W. Bartram, Nitro, W. Va., assignor to Monsanto Chemical Co., St. Louis, Mo.

2,384,880. **Thermoplastic Composition Containing a Polymer of Vinylidene Chloride and a Urea Formaldehyde Resin.** E. C. Britton and H. W. Moll, assignors to Dow Chemical Co., all of Midland, Mich.

2,384,881. **Thermoplastic Composition Containing a Polymer of Vinylidene Chloride and a Coumarone Indene Resin.** E. C. Britton and H. W. Moll., assignors to Dow Chemical Co., all of Midland, Mich.

2,384,882. **Thermoplastic Composition Containing a Polymer of Vinylidene Chloride and a Resin from the Class of the Run Natural Resins and Hydrogenated Rosin.** E. C. Britton and H. W. Moll, assignors to Dow Chemical Co., all of Midland, Mich.

2,384,883. **Thermoplastic Composition Containing a Polymer of Vinylidene Chloride and a Toluene Sulphonamide-Aldehyde Resin.** E. C. Britton and H. W. Moll, and assignor to Dow Chemical Co., all of Midland, Mich.

2,384,884. **Thermoplastic Composition Containing a Polymer of Vinylidene Chloride and a Polyvinyl-Acetal Resin.** E. C. Britton and H. W. Moll, assignors to Dow Chemical Co., all of Midland, Mich.

2,384,885. **Thermoplastic Composition Containing a Polymer of Vinylidene Chloride and a Modified Phenol-Aldehyde Resin.** E. C. Britton and H. W. Moll, assignors to Dow Chemical Co., all of Midland, Mich.

2,384,886. **Thermoplastic Composition Containing a Polymer of Vinylidene Chloride and a Water Insoluble Thermoplastic Cellulose Ether Incompatible at Room Temperature with the Polymer.** E. C. Britton and H. W. Moll, assignors to Dow Chemical Co., all of Midland, Mich.

2,384,388. **An Acetylthioalkyl Ether of Cellulose wherein the Alkyl Group Contains at Least Two Carbons.** W. J. Burke, Marshallton, assignor to E. I. du Pont de Nemours & Co., Inc., Wilmington, both in Del.

2,384,889. **As a New Composition of Matter, Alpha-Chloroacrylonitrile.** A. M. Clifford, Stow, and J. D. D'Ianni, Akron, both in O., assignors to Wingfoot Corp., Wilmington, Del.

2,384,902. **Separating a Diolefin from a Mixture of Hydrocarbons Containing a Diolefin and an Alkyl Acetylene.** E. V. Fasce, Baton Rouge, La., assignor to Standard Oil Development Co., a corporation of Del.

2,384,910. **Thermoplastic Composition Containing a Polymer of Vinylidene Chloride and White Shellac.** A. W. Hanson and W. C. Goggin, assignors to Dow Chemical Co., all of Midland, Mich.

2,384,916. **Producing High Molecular Weight Polymers from Unsaturated Hydrocarbon Reactants Containing Chiefly Isobutylene and a Small Proportion of a Diolefin.** R. L. Holmes, Roselle, N. J., assignor by mesne assignments to Jasco, Inc., a corporation of La.

2,384,935. **Reacting an Alkyl Aryl Ketone with a Low Molecular Weight Carbonyl Group-Containing Interlinking Agent Compound from the Group of Aldehydes and Ketones Containing Less Than 10 Carbon Atoms.** E. Lieber, Staten Island, N. Y., assignor to Standard Oil Development Co., a corporation of Del.

2,384,947. **Thermoplastic Composition Containing a Polymer of Vinylidene Chloride and an Unmodified Phenol-Formaldehyde Resin.** L. A. Matheson, assignor to Dow Chemical Co., both of Midland, Mich.

2,384,969. **Producing Emulsion Polymerizates of Butadienes with the Aid of Water Soluble Salts of Olefin Sulphonic Acids Containing 12-20 Carbon Atoms in the Molecule, as Emulsifying Agent.** G. E. Serniuk, Roselle, N. J., assignor to Standard Oil Development Co., a corporation of Del.

2,384,973. **Thermoplastic Composition Containing a Polymer of Vinylidene Chloride and a Compound of the Formula**

$$[R—O—R']_2—X_n$$

Where R and R' Each Represent an Aryl Group from the Class of the Phenyl, Alkylphenyl, Diphenyl, and Naphthyl Radicals; X Is a Hydroaromatic Radical from the Class of the Cyclohexyl, Dicyclohexyl, Alkylcyclohexyl, and Arylcyclohexyl Radicals, and n is an Integer from 1 to 6 inclusive. F. B. Smith, assignor to Dow Chemical Co., both of Midland, Mich.

2,384,975. **Solid Interpolymer of an Isoolefin and a Nonconjugated Diolefin.** W. J. Sparks, Elizabeth, and R. M. Thomas, both in N. J., assignors by mesne assignments to Jasco, Inc., a corporation of La.

2,384,984. **Styrene and Ethylbenzene.** C. Weizmann, London, England.

2,385,018. **Preventing the Decomposition of Esters of the Class of Monochlorofumrates, Monobromofumarates, Monochloromaleates, and Monobromomaleates, by Adding Activated Carbon.** C. R. Milone, assignor to Wingfoot Corp., both of Akron, O.

2,385,037. **Polymerized Nitroethylene.** A. E. W. Smith, Norton-on-Tees, England, assignor to Imperial Chemical Industries, Ltd., a corporation of Great Britain.

2,385,110. **For Sizing Yarns of Regenerated Cellulose, an Aqueous Composition Consisting of Polymerized Ethylene Oxide, a Wetting Agent, and a Substance from the Group of (1) Polymerized Methacrylic Acid, (2) Salts of Polymerized Methacrylic Acid, (3) Interpolymers of Methacrylic Acids and an Acrylic Acid from the Group of Acrylic and Polyacrylic Acids, and (4) Interpolymers of Methacrylic Acid with a Compound from the Group of Styrene, Vinyl Acetate, and Methyl Methacrylate, in Water.** G. W. Seymour and D. Y. Miller, Cumberland, Md., assignors to Celanese Corp. of America, a corporation of Del.

2,385,111. **Nitroethylene.** A. E. W. Smith, R. H. Stanley, and C. W. Scaife, Norton-on-Tees, England, assignors to Imperial Chemical Industries, Ltd., a corporation of Great Britain.

2,385,166. **Diolefins and Vinyl Benzenes.** H. M. Singleton, Goose Creek, and T. B. McCulloch, Baytown, both in Tex., assignors to Standard Oil Development Co., a corporation of Del.

2,385,172. **Coagulating Emulsion Polymerizates.** B. M. Vanderbilt, Cranford, and N. S. Beekley, Jr., Westfield, both in N. J., assignors by mesne assignments to Jasco, Inc., a corporation of La.

2,385,182. **Synthetic Rubber-Like Materials Obtained by Polymerizing a Mixture of a Saponifiable Derivative of Alpha-Chloroacrylic Acid and a Member of the Group of Butadiene-1, 3, Methyl Derivatives of Butadiene-1, 3, Dimethyl Derivatives of Butadiene-1, 3, 2-Chlorobutadiene-1, 3, Methyl Derivatives of 2-Chlorobutadiene-1, 3 and Dimethyl Derivatives of 2-Chlorobutadiene-1, 3.** J. G. Anderson, Trowbridge, and R. Hill and L. B. Morgan, Manchester, both in England, assignors to Imperial Chemical Industries, Ltd., a corporation of Great Britain.

2,385,187. **Ethylizing Benzene.** F. H. Blanding, Elizabeth, N. J., assignor to Standard Oil Development Co., a corporation of Del.

2,385,190. **Polymerizing a Conjugataed Butadiene Hydrocarbon in an Aqueous Emulsion in the Presence of a Tetra-Alkyl Thiuran Sulphide.** G. L. Browning, Jr., assignor by mesne assignments to B. F. Goodrich Co., both of Akron, O.

2,385,235. **Separating Styrene from a Mixture with Close-Boiling Aromatic Hydrocarbons Primarily from the Group of Ethyl Benzene and the Xylenes.** R. E. Schneider, Jackson Heights, assignor to Lummus Co., New York, both in N. Y.

2,385,240. **Water-Resistant Soybean Protein Coating Composition.** H. O. Ware, Kalamazoo, Mich., assignor to Hercules Powder Co., Wilmington, Del.

2,385,256. **Thermoplastic Molding and Extrusion Composition Containing a Vinylidene Chloride Polymer and an Alkyd Resin.** E. C. Britton and H. W. Moll, assignors to Dow Chemical Co., all of Midland, Mich.

2,385,258. **Polymerized Alpha Substituted Acrylonitrile from the Class of Alpha Hydrocarbonoxy, Furyl-Oxy, and Furfuryl-Oxy Substituted Acrylonitriles.** A. M. Clifford, Stow, assignor to Wingfoot Corp., Akron, both in O.

2,385,275. **As Vulcanization Accelerator, the Addition Product of Equimolecular Proportions of Carbon Bisulphide and 1-(α-Dimethylaminobenzyl) Naphthol-2.** A. F. Hardman, assignor to Wingfoot Corp., both of Akron, O.

2,385,290. **Copolymer of Butadiene and Acrylonitrile Plasticized with Isobutyl Trichloro-Propionate.** J. G. Lichty, Stow, O., assignor to Wingfoot Corp., Akron, O.

2,385,319. **For a Pressure-Sensitive Adhesive Tape, Rubber Coating Composition Including Among Vulcanizing Ingredients a Thiuram Polysulphide.** W. Eustis, Newton, Mass., and G. R. Orrill, Western Springs, Ill., assignors to Kendall Co., Boston, Mass.

2,85,327. **Acrylonitrile.** C. W. Bradley, Old Greenwich, and H. S. Davis, Riverside, both in Conn., assignors to American Cyanamid Co., New York, N. Y.

2,385,335. **As Vulcanization Accelerator, the Condensation Product of Mercaptobenzothiazole, Cyanamid, and Formaldehyde.** R. T. Dean, Stamford, Conn., assignor to American Cyanamid Co., New York, N. Y.

2,385,383. **Melamine Resin.** P. C. Schroy, Stamford, Conn., assignor to American Cyanamid Co., New York, N. Y.

2,385,469. **Acrylonitrile.** D. J. Salley, Stamford, Conn., assignor to American Cyanamid Co., New York, N. Y.

2,385,470. **Acrylonitrile.** D. J. Salley, Stamford, C. W. Bradley, Old Greenwich, and H. S. Davis, Riverside, all in Conn., assignors to American Cyanamid Co., New York, N. Y.

2,385,484. **Butadiene.** K. A. Wright, Oakland, assignor to Shell Development Co., San Francisco, both in Calif.

2,385,531. **Lubricating Oil Packaged in a Bag of Rubber Hydrochloride Film Plasticized with Dimethoxyethyl Phthalate.** H. J. Osterhof, Cuyahoga Falls, and La V. E. Cheyney, assignors to Wingfoot Corp., Akron, both in O.

2,385,532-2,385,535. **Plasticized Rubber Hydrochloride Film.** La V. E. Cheyney, Akron and H. J. Osterhof, Cuyahoga Falls, assignors to Wingfoot Corp., Akron, both in O.

2,385,549. **Acrylonitrile.** Le R. U. Spence, Elkins Park, assignor to Rohm & Haas Co., Philadelphia, both in Pa.

2,385,550. **Unsaturated Nitriles.** Le R. Spence, Elkins Park, assignor to Rohm & Haas, Co., Philadelphia, both in Pa.

2,385,551. **Making Acrylonitrile from Acetylene and Hydrogen Cyanide Reacted in Vapor Phase in the Presence of a Catalytic Agent Containing a Metal from the Group of Cadmium, Magnesium, and Zinc.** Le R. U. Spence, Elkins Park, D. J. Butterworth, Philadelphia, and E. H. Kroeker, Cheltenham, assignors to Rohm & Haas Co., Philadelphia, all in Pa.

2,385,552. **Dehydrogenation of Aliphatic Nitriles.** Le R. U. Spence, Elkins Park, and F. O. Haas, Villanova, assignors to Rohm & Haas Co., Philadelphia, all in Pa.

2,385,558. **Preparing a Liquid Resisting Barrier in an Impregnated Cable.** J. K. Webb, London, England, assignor to International Standard Electric Corp., New York, N. Y.

2,385,688. **Coagulating Dispersions of Polymerized 2-Chloro,3-Butadiene by Means of Magnesium Sulphate.** A. S. Carter, Wilmington, Del., and T. G. Webber, Woodbury, N. J., assignors to E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

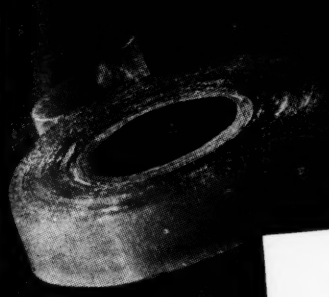
2,385,695. **Copolymer Consisting of a Lower Aliphatic Conjugated Diolefin, an Alkyl Alpha-Methylene-Alkyl Ketone, and an Alpha-Methylene-Alkyl Cyanide.** R. R. Dreisbach, assignor to Dow Chemical Co., both of Midland, Mich.

2,385,696. **Divinyl-Benzene from Diethyl-Benzene.** R. R. Dreisbach, assignor to Dow Chemical Co., both of Midland, Mich.

2,385,705. **Butadiene.** H. C. Huffman, Long Beach, assignor to Union Oil Co. of California, Los Angeles, both in Calif.

2,385,739. **Molding Composition Including a Curing Accelerator, a Mixture of a Halogenated Hydrocarbon and a Fatty Oil, and a Polymeric Derivative of Chloro-2-Butadiene-1,2 Polymerized in the Presence of Sulphur and Subsequently Plasticized until It Has a Plasticity Number of 0 to 30.** H. W. Starkweather, New Castle County, Del., and F. N. Wilder, Woodstown, N. J., assignors to E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

2,385,879. **Supporting Cast Material Having a**



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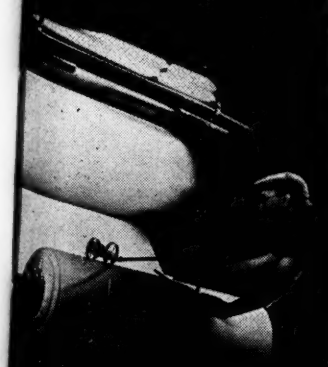

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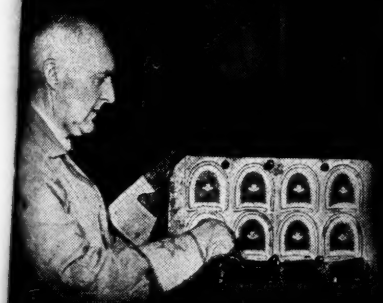
MAXIMUM COLOR-STABILITY IN FINISHED PRODUCT



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2,385,920. **Coating Composition Consisting of a Suspension of Thermoplastic Organic Material and a Plasticizer therefor, in an Organic Liquid Medium.** J. D. Jenkins, Milwaukee, Wis., assignor to Pittsburgh Plate Glass Co., Allegheny County, Pa.

2,386,044. **Recovery of Butadiene from a Gaseous Mixture Containing Unsaturated Hydrocarbons Having four Carbon Atoms to the Molecule.** E. V. Fasce, Baton Rouge, La., assignor by mesne assignments to Jasco, Inc., a corporation of La.

2,386,063. **Treating a Saturated Bicyclic Terpene with a Catalyst Capable of Polymerizing the Terpene at a Temperature between 0° and 300° C.** A. L. Rummelsburg, assignor to Hercules Powder Co., both of Wilmington, Del.

2,386,095. **Improved Heating Element Including a Semi-Conducting Film of a Polymeric Organic Non-Conducting Composition Containing an Alkyd Resin, a Polyvinyl Acetal Resin, an Insolubilizing Agent for the Acetal Resin, and Carbon Black.** D. E. Edgar, Westport, and D. J. Sullivan Fairfield, both in Conn., assignors to E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

2,386,111. **Amine Salts of Dithiofuroic Acid.** A F Hardman, assignor to Wingfoot Corp., both of Akron, O

2,386,112 **For Bonding Rubber to Solid Non-Rubber Surfaces, a Base Coat Consisting of a Soluble Reactive Phenol-Aldehyde Resin to Which Is Applied an Adhesive Composition Including Rubber, a Soluble Reactive Phenol-Adehyde Resin, and an Oxidizing Agent** H. H. Harkins, North Providence, R. I., assignor to United States Rubber Co., New York, N. Y.

2,386,200. **Recovery of Butadiene from a Hydrocarbon Fluid.** H. E. Drennan, Bartlesville, Okla., assignor to Phillips Petroleum Co., a corporation of Del.

2,386,212. **In a Process wherein a Rubber Composition Is Firmly Adhered to a Metal Which under Vulcanizing Conditions Is Easily Attacked by Ingredients of the Rubber Compound, the Use of an Intermediate Film Formed from an Organic Adhesive Solution Containing a Rubber Conversion Product and Having Flaky, Inorganic Solid Material therein.** T. R. Griffith, assignor to Honorary Advisory Council for Scientific & Industrial Research, both of Ottawa, Ont., Canada.

2,386,213. **Adhesives from Cyclized Rubber Derivative for Bonding Rubber to Metal.** T. R. Griffith, assignor to the Honorary Advisory Council for Scientific & Industrial Research, both of Ottawa, Ont., Canada.

2,386,272. **Removing Dissolved Copper Compounds in the Form of Cuprous Salt-Unsaturated Hydrocarbon Complexes from Liquid Low-Boiling Aliphatic Diolefin Hydrocarbon Concentrates.** W. A. Schulze, Bartlesville, Okla., assignor to Phillips Petroleum Co., a corporation of Del.

2,386,274. **Separating Butadiene.** G. H. Short and L. C. Morris, Bartlesville, Okla., assignors to Phillips Petroleum Co., a corporation of Del.

2,386,287. **Improved Emulsions of or Containing Organic Polysulphides.** J. R. Blanco, Wylde Green, Sutton Coldfield, A. E. T. Neale, Erdington, Birmingham, and D. F. Twiss, Sutton Coldfield, assignors to Dunlop Rubber Co., Ltd., London, all in England.

2,386,300. **Separating Diolefins.** H. E. Drennan and W. A. Schulze, Bartlesville, Okla., assignors to Phillips Petroleum Co., a corporation of Del.

2,386,310. **Butadiene from Normal Butane.** K. H. Hachmuth, Bartlesville, Okla., assignor to Phillips Petroleum Co., a corporation of Del.

2,386,324-2,386,325. **Dehydrating 1,3-Butadiene Glycol to Produce 1,3-Butadiene.** A. E. Lorch, Tenafly, N. J., assignor to Air Reduction Co., Inc., New York, N. Y.

2,386,347. **Solid, Macromolecular, Hydrolyzed Interpolymer of Ethylene with a Vinyl Ester of an Organic Monocarboxylic Acid.** J. R. Roland, Jr., assignor to E. I. du Pont de Nemours & Co., Inc., both of Wilmington, Del.

2,386,350. **Production of Butadiene by Dehydrogenating Butane.** W. A. Schulze, Bartlesville, Okla., assignor to Phillips Petroleum Co., a corporation of Del.

2,386,351. **Manufacture and Recovery of Dioefins.** W. A. Schulze, Bartlesville, Okla., assignor to Phillips Petroleum Co., a corporation of Del.

2,386,352. **Purification of Low-Boiling Normally Liquid Diolefins.** W. A. Schulze, Bartlesville, Okla., assignor to Phillips Petroleum Co., a corporation of Del.

2,386,353. **Removal of Dissolved Unsaturated Hydrocarbon-Cuprous Halide Addition Compound from Liquid Aliphatic Conjugated Diolefin Concentrate.** W. A. Schulze, Bartlesville, Okla., assignor to Phillips Petroleum Co., a corporation of Del.

2,386,354. **Diolefins.** W. A. Schulze, J. C. Hillyer, and H. E. Drennan, Bartlesville, Okla., assignors to Phillips Petroleum Co., a corporation of Del.

2,386,355-2,386,356. **Separation of Diolefins.** W. A. Schulze and L. C. Morris, Bartlesville, Okla., assignors to Phillips Petroleum Co., a corporation of Del.

2,386,365. **Polymerizable Unsaturated Aliphatic Acid from Acrolein and Alpha-Substituted Derivatives thereof.** H. P. Staudinger, Ewell, K. H. W. Tuerck, Banstead, and E. H. Brittain, Epsom Downs, all in England, assignors to Distillers Co., Ltd., Edinburgh, Scotland.

2,386,379. **Separating Aliphatic Conjugated Diolefins from Hydrocarbon Mixtures.** I. L. Wolk, Bartlesville, Okla., assignor to Phillips Petroleum Co., a corporation of Del.

2,386,403. **Liquid Adhesive Composition Including Polymerized Chloroprene Dispersed in a Solvent therefor. This Composition Contains Emulsified Water and Chlorinated Rubber as Emulsifying Agent for the Water.** A. D. Macdonald, Malden, and J. H. Rishton, Wakefield, assignors to B. B. Chemical Co., Boston, all in Mass.

2,386,405. **Plasticized Polyvinyl Chloride.** E. R. Meincke, Akron, O., assignor to American Cyanamid Co., New York, N. Y.

2,386,427. **Mixture Including a Copolymer of an Olefin and a Conjugated Diolefin, Para-Quinone Dioxime and a 1,3-Epoxybenzofurazane.** S. Breck, Rutherford, N. J., assignor to United States Rubber Co., New York, N. Y.

2,386,443. **Butadiene-Acrylonitrile Copolymer Mixed with a Mixed Ester of the Formula**

$$R[XY]n$$

Where R is the Residue of a Polyhydric Alcohol, X is the Residue of Phthalic Acid, Y is an Alkyl Group, and *n* is an integer. A. R. Davis, Riverside, Conn., assignor to American Cyanamid Co., New York, N. Y.

2,386,445. **Composition Containing an Esterified Aliphatic Polycarboxy Sulpho Acid Fractional Diester of a Polyoxyalkylene Glycol.** M. De Groote, University City, and B. Keiser, Webster Groves, both in Mo., assignors to Petrolite Corp., Ltd., Wilmington, Del.

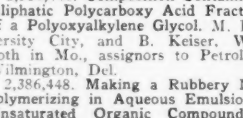
2,386,446. **Composition Containing an Esterified Aliphatic Polycarboxy Acid Fractional Monoester of a Polyoxyalkylene Glycol.** M. De Groote, University City, and B. Keiser, Webster Groves, both in Mo., assignors to Petrolite Corp., Ltd., Wilmington, Del.

2,386,448. **Making a Rubbery Material by Copolymerizing in Aqueous Emulsion a Mixture of Unsaturated Organic Compounds Including a Conjugated Organic Diolefin and an Unsaturated Ketone.** R. R. Dreisbach, assignor to Dow Chemical Co., both of Midland, Mich.

2,386,449. **Recovery of Rubber-Like Products from Emulsions.** R. R. Dreisbach, assignor to Dow Chemical Co., both of Midland, Mich.

2,386,454. **High Molecular Weight Linear Polyester-Amides.** C. J. Frosch, Summit, N. J., assignor to Bell Telephone Laboratories, Inc., New York, N. Y.

2,386,457. **As Vulcanization Accelerator, a Thiocarbamyl Sulphamine Having the Formula**



Where Y Is of the Group of Oxygen and —CH_2. R. S. Hanslick, Wyndmoor, Pa., assignor to United States Rubber Co., New York, N. Y.

2,386,468. **Producing Isobutene by Subjecting Normal Butene to the Action of an Acid Treated Clay.** V. N. Ipatieff and R. E. Schaad, assignors to Universal Oil Products Co., all of Chicago, Ill.

2,386,537. **Isoprene.** C. H. Bibb, assignor to Newport Industries, Inc., both of Pensacola, Fla.

2,386,586. **Acrylonitriles.** J. H. Brant and R. L. Hasche, Kingsport, Tenn., assignors to Eastman Kodak Co., Rochester, N. Y.

2,386,631. **Waterproofing Product Made from a Wax, a Chloride, a Long-Chain Aliphatic Nitrile, and an Aldehyde.** R. A. Pingree, Cranston, R. I., assignor to Warwick Chemical Co., Warwick, R. I.

2,386,661. **Improving Butadiene-Acrylonitrile Copolymers by Adding Methyl Methacrylate.** A. M. Clifford, Stow, and W. D. Wolfe, Cuyahoga Falls, assignors to Wingfoot Corp., Akron, all in O.

2,386,674. **Aqueous Dispersion of Polymers of Ethylene of Horny Consistency and Polyisobutylene.** C. F. Flint and R. B. F. F. Clarke, both of Blackley, Manchester, England, assignors to Imperial Chemical Industries Ltd., a corporation of Great Britain.

2,386,694. **As a New Compound, 2,3-Dichloropropyl Alpha-Chloroacrylate.** J. G. Lichty, Stow, assignor to Wingfoot Corp., Akron, both in O.

2,386,696. **Non-Hardening, Permanently Tacky Adhesive Composition Including Rubber and a Substance from the Group of Gutta Resin and Balata Resin, in the Proportion of 5:1 by Weight.** J. Lloyd, assignor to J. Mandleberg & Co., Ltd., both of Pendleton, England.

2,386,700. **Paper Coated with a Mixture of Rubber Hydrochloride and a Benzene-Soluble Copolymer of Vinyl Chloride and Vinylidene Chloride.** F. H. Manchester, assignor to Wingfoot Corp., both of Akron, O.

2,386,707. **Reclaiming a Butadiene Copolymer of the Class Produced with Styrene and with Acrylonitrile, by Heating It with a Swelling Agent Containing Ethyl Alcohol as a Plasticizer.** D. V. Moore and H. H. Thompson, assignors to Wingfoot Corp., all of Akron, O.

2,386,734. **Separation of Conjugated Diolefins from Gas Mixtures Containing Them with the Aid of Finely Divided Cuprous Halide Particles.** I. L. Wolk, Bartlesville, Okla., assignor to Phillips Petroleum Co., a corporation of Del.

2,386,735. **Polymerizing a Butadiene and a Vinyl Compound in an Aqueous Emulsion in the Presence of a Catalyst from the Group of Hydrogen Peroxide and Hydrogen Peroxide Generating Compounds and Acetaldehyde.** A. M. Borders, W. D. Wolfe and H. J. Osterhof, Cuyahoga Falls, and C. W. Walton, Stow, assignors to Wingfoot Corp., Akron, both in O.

2,386,736-2,386,737. **Cyanoethylation of Ketones.** H. A. Bruson, assignor to Resinous Products & Chemical Co., both of Philadelphia, Pa.

2,386,744. **Plastic Masses Formed by Mechanically Working together an Organic, Solvent-Soluble Condensate of a Saturated, Aliphatic Dicarboxylic Acid and a Polyhydric Alcohol, and a Hydrocarbon-Soluble Condensate of a Member of the Class of Carbamides and Aminotriazines, Formaldehyde, and an Aliphatic Alcohol.** F. J. Myers, assignors to Resinous Products & Chemical Co., both of Philadelphia, Pa.

Dominion of Canada

430,244. **The Product Obtained by Simultaneously Hydrolyzing and Acetalizing an Infusible, Insoluble Copolymer of Vinyl Acetate and Diallyl Phthalate.** Canadian General Electric Co., Ltd., Toronto, Ont., assignee of G. F. D'Ailelio, Pittsfield, Mass.

430,249. **Wire Coating Composition Including a Uniform Blend of a Cellulose Ether with the Reaction Product of a Compound from the Group of Aldehydes and Ketones, with a Hydrolyzed, Polymerized Vinyl Ester.** Canadian Industries, Ltd., Montreal, P. Q., assignee of D. D. Payne, Nutley, N. J., U. S. A.

430,250 **Furan.** Canadian Industries, Ltd., Montreal, P. Q., assignee of O. W. Cass, Niagara Falls, N. Y., and L. G. Cliver, Baton Rouge, La., both in the U. S. A.

430,306. **The Product resulting from Pouring Bodied Dehydrated Castor Oil into a Solution of Chlorinated Rubber (Tornesit) in a Solvent Including a Compatibilizing Agent from the Group of Esters and Ketones.** Vellumoid Co., Worcester, assignee of L. H. Hills, Taunton, both in Mass., U. S. A.

430,314. **Packaging Material Coated with a Highly Moistureproof Composition Including a Cyclized Rubber Which Has not Been Fully Oxidized and an Oxidation Inhibitor.** Wingfoot Corp., Akron, assignee of C. M. Carson, Cuyahoga Falls, both in O., U. S. A.

430,316. **Moisture-Resistant Barrier Composed of Rubber Hydrochloride and a Copolymer of Vinyl Chloride and Vinylidene Chloride.** Wingfoot Corp., assignee of J. P. Maider, both of Akron, O., U. S. A.

430,317. **Heating Guayule Rubber in a Dilute Caustic Solution at 150° C. and Then Subjecting It to a Solvent Treatment to Extract Resinous Matter.** Wingfoot Corp., Akron, assignee of A. J. Gracia, Cuyahoga Falls, and H. V. Powers, Talmadge, both in O., U. S. A.

430,318. **Composition Including a Copolymer of Butadiene and Acrylonitrile Plasticized with Isobutyl Trichloro Propionate.** Wingfoot Corp., Akron, assignee of J. G. Lichty, Stow, both in O., U. S. A.

430,505. **Wire Coating Composition Including a Furfuryl Alcohol Condensate to Which Is Added a Synthetic Linear Polyamide.** Canada Wire & Cable Co., Ltd., Leaside, Ont., assignee of General Cable Co., New York, assignee of H. J. Kaurh, Schenectady, both in N. Y., U. S. A.

430,553. **In an Abrasive Article, a Cellulosic Backing Containing a Rubber-Resin Flexibilizing Agent Compatible to Aqueous and Waterproof Adhesive Binders.** Minnesota Mining & Mfg. Co., assignee of B. S. Cross, both of St. Paul, Minn., U. S. A.

430,678. **Rubber Derivative Formed by Heating in a Vacuum a Relatively Thin Sheet of a Mixture of Unvulcanized Rubber, a Salt of a Strong Acid, a Weak Acid, and Less Than 3% Sulphur.** Honorary Advisory Council for Scientific & Industrial Research, assignee of T. R. Griffith, both of Ottawa, Ont.

United Kingdom

571,494. **Rubber Composition.** Wingfoot Corp.

571,495. **Synthetic Rubber Compositions.** Wingfoot Corp.

571,496. **Resinous Compositions.** British Thomson-Houston Co., Ltd.

571,498. **Dielectric and Insulating Compositions.** British Thomson-Houston Co., Ltd.

571,560. **Keto Ester and Polymers Therein.** Wingfoot Corp.

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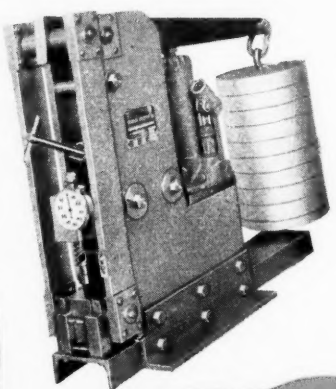

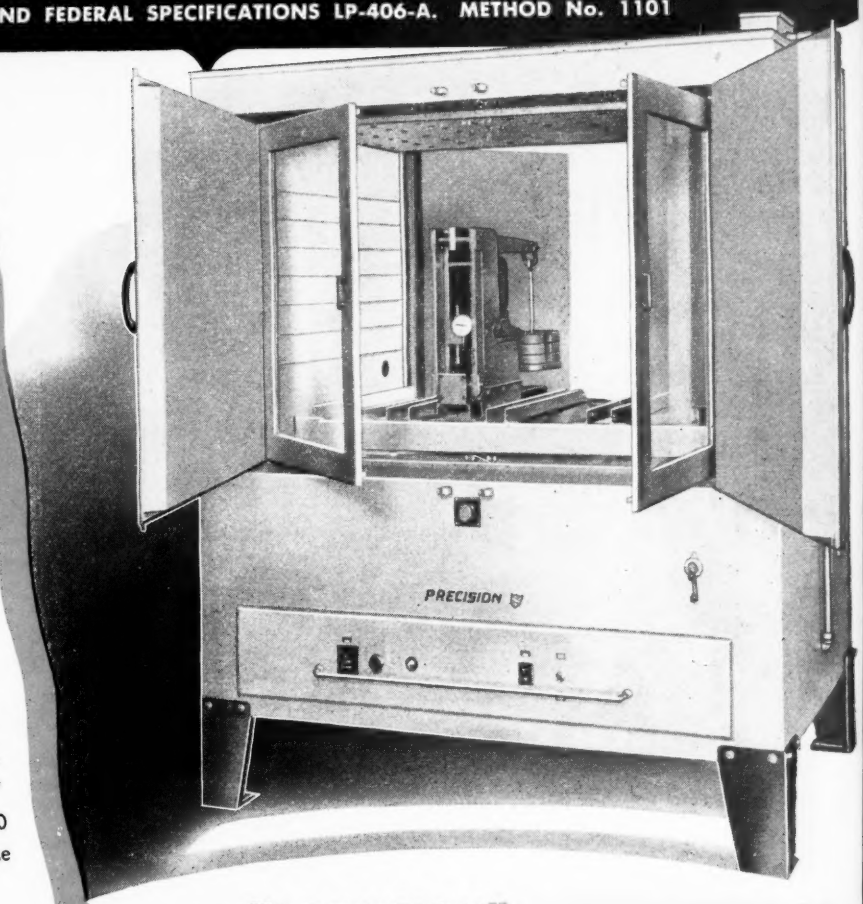

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571,660. **Resinous Condensation Products.** British Thomson-Houston, Ltd.
571,662. **Stabilization of Polyvinyl Acetal.** Wingfoot Corp.
571,695. **Thermoplastic Polymeric Material.** H. Dreyfus.
571,708. **Linear Polyamides.** E. I. du Pont de Nemours & Co., Inc.
571,727. **Polyvinyl Acetal Compositions.** Imperial Chemical Industries, Ltd.
571,736. **Dehydrogenation of Butenes to Butadiene.** Shell Development Co.
571,750. **Nitriles and Polymers thereof.** W. W. Triggs. (Wingfoot Corp.)
571,780. **Benzene Sulphonylguanidines.** American Cyanamid Co.
571,784. **Plasticizing Vulcanized Rubber.** Boston Woven Hose & Rubber Co.
571,786. **Moldable Compositions.** F. Frank.
571,813. **Treatment of Rubber.** United States Rubber Co.
571,814. **Polymerized Hydrocarbons in Powder Form.** Telegraph Construction & Maintenance Co., Ltd., and H. F. Wilson.
571,826. **Oriented Fibers of Hydroxylated Vinyl Interpolymers.** E. I. du Pont de Nemours & Co., Inc.
571,829. **Cyanostyrene Copolymers.** Wingfoot Corp.
571,832. **Compositions Containing Vulcanized Oil and Resin.** Semtex, Ltd., F. G. Mottershaw, L. H. Griffiths, and P. H. Robin.
571,943. **Polymers of Ethylene.** W. Baird, J. S. A. Forsyth, and Imperial Chemical Industries, Ltd.
572,008. **Condensation Products.** E. I. du Pont de Nemours & Co., Inc., W. J. Burke, and F. W. Hoover.
572,030. **Coagulation of Aqueous Dispersions of Rubber and Rubber-Like Materials.** Dunlop Rubber Co., Ltd., S. D. Taylor, E. W. Madge, and E. A. Murphy.
572,045. **Styrene.** A. L. Mond. (Universal Oil Products Co.)
572,101. **Alkoxy Propionitriles.** Wingfoot Corp.
572,102. **Age Resisters.** Wingfoot Corp.
572,128. **Recovering Quebrachitol from Rubber Latex Serum.** United States Rubber Co.

MACHINERY

United States

2,384,982. **Apparatus for Heat Treatment of Insulating Material on Wires.** G. H. Walton, Helsby, J. C. Quayle, Manley, and P. P. Jones, Kelsall, assignors to British Insulated Cables Ltd., Prescot, all in England.
2,384,983. **Conducting and Insulating Winding Machine.** F. Weiss, Brookline, Mass., assignor to Cornell-Dubilier Electric Corp., a corporation of Del.
2,385,143. **Apparatus for Processing and Curing Plastic.** A. C. Levine, Buffalo, N. Y.
2,385,628. **Footwear Vulcanizer.** L. J. Larkin and J. J. Regan, assignors to La Crosse Rubber Mills Co., all of La Crosse, Wis.
2,386,034. **Tong Gripper.** H. S. Church, Cuyahoga Falls, assignor to Monarch Rubber Co., Hartville, both in O
2,386,086 **Reeling Apparatus.** J. D. Beebe, Silver Lake, O., assignr to B. F. Goodrich Co., New York, N. Y.
2,386,697. **Apparatus for Injection Molding of Plastic Materials.** H. J. Lynch, Cornwall-on-Hudson, N Y

Dominion of Canada

430,247. **Apparatus for Use in the Extrusion of a Molten Composition Containing Bubbles.** Canadian Industries, Ltd., Montreal, P. Q., assignee of G. DeW. Graves, Wilmington, Del., U. S. A.
430,248. **Apparatus for Continuous Melt-Spinning of Filaments, Yarns, Ribbons, etc., from Molten Synthetic Superpolymers.** Canadian Industries, Ltd., Montreal, P. Q., assignee of G. DeW. Graves, Wilmington, Del., U. S. A.
430,315. **Tire Building Apparatus.** Wingfoot Corp., assignee of J. I. Haase, both of Akron, O., U. S. A.

United Kingdom

571,598. **Apparatus for Effecting Localized Heat and Pressure Operations on Vulcanizable or Plastic Articles.** British Tire & Rubber Co., Ltd., and J. Birdbeck.
572,030. **Apparatus for Coagulating Aqueous Dispersions of Rubber and Rubber-Like Materials.** Dunlop Rubber Co., Ltd., S. D. Taylor, E. W. Madge, and E. A. Murphy.

UNCLASSIFIED

United States

2,384,803. **Device for Holding and Smoothing Inner Tubes for Automobile Tires to Be Repaired.** G. M. Anderson, Duvall, Wash.
2,385,368. **Cable Slitter.** R. J. Montgomery, assignor to H. G. Montgomery, both of Chicago, Ill.
2,385,456. **Mold for Use in a Vulcanizing Machine Employing a Heated Drum and a Pressure Band Tensioned around the Drum.** G. D. Marcy, Newton Highlands, assignor to Boston Woven Hose & Rubber Co., Cambridge, both in Mass.
2,385,491. **Tube Testing Apparatus.** E. Blair, assignor to Standard Aircraft Products, Inc., both of Dayton, O.
2,386,109. **Hose Coupling.** D. P. Glessner, assignor to Akron Brass Mfg. Co., Inc., both of Wooster, O.
2,386,562. **Hose Coupling.** F. D. Mahoney, San Francisco, Calif.
2,386,629. **Hose Clamp.** E. W. North and W. O. Burhe, assignors to National Lock Co., all of Rockford, Ill.

Dominion of Canada

430,320-430,321. **Hose Clip.** R. C. S. Jamie, Pathlow, Warwickshire, and Hunt & Turner Ltd., Birmingham, Warwick, both in England, assignee of one-half of the interest.
430,425. **Electric Cable Joint.** International Standard Electric Corp., New York, N. Y., U. S. A., assignee of T. R. Scott and E. C. Lee, both of London, England.
430,436. **Hose Reel.** C. E. Frick, J. R. McCoy, J. H. and J. A. Jensen, and E. F. Davis, executor and ancillary executor under the will of G. M. Heller, deceased, G. B. and C. E. Frick, Jr., G. D. Whyte and F J. Stackpole, co-partners as their interest may appear therein trading under the name of Philadelphia Valve Co., assignor of J. A. Jensen, all of Philadelphia, Pa.
430,608-430,609. **Tractor Wheel.** Société Anonyme des Pneumatiques Dunlop, assignee of M. E. R. Bernardon, both of Paris, France.
430,618. **Tire Valve.** K. V. Baker, Malaga, O., U. S. A.

United Kingdom

571,508. **Device for Simultaneously Locking a Cycle Wheel and Tire Inflator.** W. W. Triggs. (F. Head.)
571,770. **Foot-Pumps for Inflating Tires.** E. Able.
571,817. **Apparatus for Ultra-Sonic Testing.** Wingfoot Corp.
572,001. **Coupling for Hose, Tubes, etc.** F. Kay.
572,026. **Mechanism for Twisting together a Plurality of Strands.** United States Rubber Co.

TRADE MARKS

United States

416,469. **Atomite.** Filler for rubber. Thompson-Weinman & Co. Inc., Cartersville, Ga.
416,485. **Restfoam.** Latex foam. Hewitt Rubber Corp., Buffalo, N. Y.
416,486. **Rest-Tex.** Latex foam. Hewitt Rubber Corp., Buffalo, N. Y.
416,496. **Lopac.** Treated fabrics to insulate electrical conductors. Pacific Mills, New York, N. Y.
416,510. **Val-Keen.** Sporting goods. Oakes & Co., doing business as Tru-Test, Chicago, Ill.
416,556. **Learn to Walk.** Footwear. Ettelbrick Shoe Co., Greenup, Ill.
416,596. **Nunn-Bush.** Footwear. Nunn-Bush Shoe Co., Milwaukee, Wis.
416,603. **Servicised.** Girdles, brassieres, gloves, and bathing suits and caps. A. C. Fischer, doing business as Servicised Products Co., Chicago, Ill.
416,619. **"Eclipse."** Adhesive cements. O'Sullivan Rubber Co., Inc., Winchester, Va.
416,625. **"O'Sullivan's."** Rubber heels and soles. O'Sullivan Rubber Co., Inc., Winchester, Va.
416,633. Representation of an oval enclosed within which is a drawing of a globe of the world with a top hat perched above it; above this the words: **"Extra-Quality,"** and below the words: **"Collins & Fairbanks, 400 Washington St. Near Franklin, Boston."** Rainwear. Wm. Filene's Sons Co., Boston, Mass.
416,644. Representation of a circle, the top half containing the word: **"Synvar,"** and the lower half containing the word: **"Resins."** Resins. Synvar Corp., Wilmington, Del.
416,656. **Vultac.** Vulcanizing agents and age resisters. Sharples Chemicals, Inc., Philadelphia, Pa.
416,661. **Wearso.** Hose. Pioneer Rubber Mills, San Francisco, Calif.
416,675. **"Ruffster's."** Footwear. H. Chaves, doing business as Chaves Shoe Co., Boston, Mass.
416,682. Representation of an inflation. Inflations or flexible linings for the shell of a teat cup assembly for milking machines. Babson Bros. Co., Chicago, Ill.
416,683. **Resproof.** Solutions, suspensions and emulsions, of synthetic resins for treating textiles and other fibrous materials. Monsanto Chemical Co., St. Louis, Mo.
416,699. Representation of a woman with the figure eight forming her body. Foundation garments. El-ee's Foundations, Newark, N. J.
416,765. **Rotovane.** Tires. B. F. Goodrich Co., New York, N. Y.
416,781. **Cyclecadé.** Tires and tubes. Pharie Tire & Rubber Co., Newark, O.
416,785. **Wishbone.** Arch supports. Scholl Mfg. Co., Inc., Chicago, Ill.
416,845. **Philco.** Rubber molding for air conditioning equipment. Philco Corp., Philadelphia, Pa.
416,851. **Wire-Lokt.** Abrasive elements. Gardner Machine Co., South Beloit, Ill.
416,859. **Velide.** Artificial leather. Firestone Tire & Rubber Co., doing business as Firestone Industrial Products Co., Akron, O.
416,860. **Velohide.** Artificial leather. Firestone Tire & Rubber Co., doing business as Firestone Industrial Products Co., Akron, O.
416,869. **Plasti-Cleer.** Baby pants. Goodyear Rubber Sundries, Inc., New Haven, Conn.
416,892. **Hi-Temp.** Gaskets. Pipe Coupling, Inc., New York, N. Y.
416,929. Representation of a warrior with the word: **"Clearseal"** written above him. Transparent film of vinyl resin. Cleaveland Laboratories & Mfg. Co., Inc., Peapack, N. J.
416,957. **3 in 1.** Rubber stamps, holders, and pads therefor sold as a unit. S. R. Hershman, doing business as Hollywood Bugle, Hollywood, Calif.
417,043. Fanciful circle enclosing the words: **"Shoes of Merritt."** Footwear. Geo. Merritt Shoe Co., Inc., Brockton, Mass.
417,045. **Fashion Fresh.** Footwear. Milius Shoe Co., St. Louis, Mo.

SCRAP RUBBER

ACCORDING to the *National Waste Review,* new and tighter restrictions by reclaimers on the purchase of scrap rubber have caused extreme dullness in some eastern sections and sharply limited the market elsewhere. The latest revision of "Specifications for Scrap Rubber" by the Rubber Reclaimers Association, effective September 21, 1945, but published only recently, has incorporated in it two types for almost all grades, one natural and one synthetic rubber scrap. Not more than 10% synthetic rubber is permitted in any mixed scrap unless specially provided for by agreement between the buyer and seller. Prices for some of the major grades have moved downward because of the reduced demand.

Scrap Rubber Ceilings

	¢ per Lb.
Inner Tubes†	
Red passenger tubes	7½
Black passenger tubes	6¾
Truck tubes	6½
Tires‡	$ per Short Ton
Mixed passenger tires	20.00
Beadless passenger tires	26.00
Mixed truck tires	20.00
Solid tires	36.00
Peelings†	
No. 1 peelings (natural and synthetic) (Recap or retread)	52.25 44.41
2 peelings (natural and synthetic) (Recap or retread)	33.00 28.05
No. 1 light colored (zinc) carcass	57.75
Miscellaneous Items*	
Air brake hose	25.00
Miscellaneous hose	17.00
Rubber boots and shoes	33.00
Black mechanical scrap above 115 sp. gr.	20.00
General household and industrial scrap	15.00

† All consuming centers except Los Angeles.
‡ Akron only.
* All consuming centers.

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EUROPE

GREAT BRITAIN

Research Encouraged by the Government

The end of the war finds the United Kingdom keenly conscious of the importance to the country of intensive research work both by the government and industry and hence for the need of more technical education in general and of expert training in research work in particular. To insure the availability of the larger number of trained scientific investigators desired, research workers and students are to be encouraged by special grants and allowances to be made by the Department of Scientific and Industrial Research. There will be maintenance allowances for qualified students who are unable to get from other sources the cost of maintenance and training, and approved fees and grants will also be paid. Students would probably have to undertake some teaching work.

Senior research awards tenable at any institution in Britain approved by the advisory council and approved fees for two and possibly three years will be granted investigators of acknowledged standing for researches of exceptional timeliness and promise in which they are personally engaged. Grants may be made to enable investigators to employ an assistant and to purchase required special equipment or material.

Technical education, apparently of a more general nature, is to be provided by a nation-wide scheme to include all classes of workers from craftsmen to research experts and managers, Miss Ellen Wilkinson, Minister of Education, discolsed in an address to the Bristol Association for Commercial and Industrial Education. To further this plan almost £500,000 has been allotted for construction work in the next 12 months. Great interest is being shown in the scheme, and an announcement that next year a training college for technical teachers is to be started at Bolton called forth more than 500 applications.

As to rubber technology in particular, several established educational institutions in England and Scotland have begun the fall semester by offering special courses for those intending to enter the field of rubber planting or of rubber goods manufacture. In Scotland, the North of Scotland College of Agriculture, Aberdeen, has begun special classes to prepare men for administrative and executive work on rubber and tea plantations; while the Royal Technical College, Glasgow offers day and evening courses in chemical subjects and rubber technology, among others.

At the Aston Technical College, Aston, Birmingham, evening courses in rubber technology were started with T. E. Gray as lecturer. The syllabus follows: crude rubber production: wild rubber, plantation rubber; compound preparation: washing and drying, refining, plasticizing and mastication, mixing, compounding ingredients; processing: sheeting, calendering, extruding, solutions and doughs, textile impregnation, reclaiming; product fabrication: solid and pneumatic tires, mechanical goods including rub-

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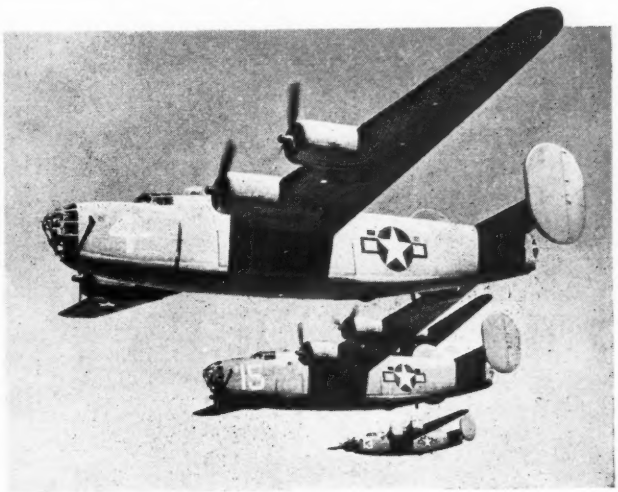
New Line of S/V Sovaloids Meets Many Synthetic Rubber Processing Needs!

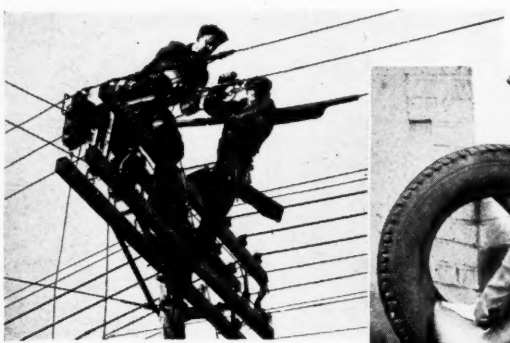
To speed and improve synthetic rubber compounding, the Socony-Vacuum Oil Company has developed a new line of hydrocarbon plasticizers known as the S/V Sovaloids.

The new plasticizers, already in use in many mills, possess special characteristics that are entirely different from those of plasticizers previously obtained from petroleum. These special properties fit them particularly for the processing of many synthetic rubber compounds.

The S/V Sovaloids are available now in a number of different grades, covering the processing of many types of synthetic rubber. The captions under the pictures on this page give some of the advantages of four grades of Sovaloids. See your Socony-Vacuum Representative for facts and figures, and assistance on applications to your operations.



S/V SOVALOID L, makes Neoprene flexible at extreme low temperatures (down to minus 60° F.). Thus, it is invaluable in processing Neoprene for such uses as airplane parts.



S/V SOVALOID C, helps produce smooth GR-S stocks with excellent dielectric properties. It is an aid in processing extruded and calendered stocks such as cable castings. It cuts milling and compounding time.

S/V SOVALOID A, improves processing of stock for innertubes and many other items. It speeds breakdown on the mill, minimizes sticking and is useful in lubricating extruded compounds.

S/V SOVALOID N, is recommended for use in Neoprene compounds requiring large amounts of softener without subsequent blooming, such as those used in printing rolls. It is also a plasticizer for other more conventional Neoprene compounds.

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SCRAP

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MEYER & BROWN CORP.

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WITH THE INCREASED USE OF **SYNTHETICS** WE HAVE BEEN ASKED TO SUPPLY BOTH STANDARD AND SPECIAL EQUIPMENT FOR THE CUTTING, GRINDING, TRIMMING, ETC., OF THE MANY COMPOUNDS NOW IN USE AND WILL WELCOME YOUR INQUIRIES DEALING WITH THESE AND KINDRED OPERATIONS.

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ber-metal engineering components, methods of molding, miscellaneous goods; physical and chemical testing: various testing procedures with typical results. The program has been arranged in such a way as to enable students, particularly men returning from the Forces, to join at any stage.

Then, in cooperation with the Midland Section of the Institution of the Rubber Industry, the British Rubber Producers' Research Association gave a course of lectures held in Birmingham, as follows:

October 9. "The Mechanical Properties of Highly Elastic Materials," L. R. G. Treloar.

October 16. "The Relation between the Swelling and the Mechanical Properties of Rubbers," G. Gee.

October 30. "Bond Resonance and Its Bearing on the Chemistry of Rubber," L. Bateman.

November 6. "The Oxidation of Rubber. A Kinetic Approach," J. L. Bolland.

November 13. "X-Ray Structural Analysis of High Polymers," G. A. Jeffrey.

November 20. "The Chemistry of Vulcanization," G. F. Bloomfield.

Papers Presented before the I.R.I.

The papers to be presented before the various sections of the Institution of the Rubber Industry during the 1945-46 season include:

London Section. October 8. "Electrically Conductive Rubber," D. Bulgin.

November 12. "Postwar *versus* Prewar Selling," P. W. Howard.

November 26. "Synthetic Polymers in the War Effort," S. J. Skinner.

January 14, 1946. "The Substitution of Natural Latex by Synthetic Latex and Reclaim Dispersions," S. D. Sutton.

February 11. "The Influence of Temperature on Resilience," L. Mullins.

Manchester Section. October 22. "New Methods of Molding," S. Buchan.

November 19. "The Effect of the War on the British Rubber Industry," H. J. Tew.

January 21, 1946. "Mechanical Properties of Elastic Materials," L. R. Treloar.

March 18. "Rubber in the Printing Industry," J. A. Morrison

Midland Section. October 8. "The Rubber Industry: Overseas Production and Export Policy," H. C. Chapman.

November 12. "Production of Natural Rubber. Transition from War to Peace," F. D. Ascoli.

December 10. "Postwar Rubber Prospects in the U. S. A.," L. H. Bennett.

January 14, 1946. "Oil-Resisting Synthetics: Some Uses and Applications," J. Birkbeck.

March 11. "Synthetic Elastomers," J. W. Davidson.

April 8. "Rubber-Anti-Vibration Devices," H. F. L. Jenkins.

Scottish Section. November 20 (Edinburgh). "From Old to Modern Methods of Manufacture," H. J. Stern.

December 11. (Glasgow.) "Costing and Wage Payment," W. H. Lundie.

January 22, 1946. (Edinburgh.) "Industrial Welfare as Applied to the Rubber Industry," F. Monk.

February 19. (Glasgow.) "Thiuram Disulphides in Compounding," G. D. Morrison and T. Shephard.

March 20. (Edinburgh.) "Textiles Technology as Applied to the Rubber Industry," Mr. Appleyard.

Radio Heating Exhibit

What is claimed to be the world's first exhibition of radio heating was held the week of September 21-28 in London by Rediffusion, Ltd., maker of Redifon radio heating sets. Various heating models, both small and factory scale, were shown, and a variety of products made with the aid of these devices was displayed, including rubber moldings, disks, gloves, hot water bottles, a tire, and footwear. It is claimed that the method is also suitable for heating bales of rubber as they arrive, that promising results have been obtained in repairing giant tires, and also in drying latex. At present, however, radio heating seems most useful in its application to plastics, gluing, drying, and metals. Indeed it is admitted that as regards rubber, the process needs much experimental development because of the problems posed by the properties of the material and the great variations in behavior of different stocks. But for a proper solution of the problem of the application of radio heating to rubber, close collaboration between the rubber chemist, the manipulator, and the radio engineer is necessary.

Seaming Polyvinyl Sheeting

In its August 25, 1945 issue, *India Rubber Journal* mentioned the use in America of a device for forming seams on polyvinyl chloride sheeting. The journal now learns from Herts Pharmaceuticals, Ltd., Welwyn Garden City, of a new machine made for this company by Murphy Radio, Ltd., for the same purpose. We are told that "on the principle of two electrodes in the form of wheels connected to a source of alternating current at radio frequency (e.g. 50 to 80 megacycles per second), the wheels being lightly spring-loaded to exert a pressure on an insulating material placed between them, perfect seams are produced." The source current is a radio frequency oscillator unit.

The mechanism and cycle of operations are very similar to those of an ordinary electric spot-welding machine, it is stated. The time required for making a weld depends on the thickness of the material used, but in any case is very short, and two 0.15-inch layers of polyvinyl chloride can be sealed in half a second. To deal with various thicknesses, two degrees of radio frequency power output can be selected by means of a front-panel switch.

Although the device is primarily designed for lap-welding up to a total thickness of ¼-inch—nominally used in the packaging trade, particularly for hermetically sealed containers—the material to be treated should have a high power factor, should be a sufficiently good insulator to avoid breakdown by voltage across the electrodes, and must be a true thermoplastic. In other words, the machine is chiefly useful for polyvinyl chloride and cellulose esters.

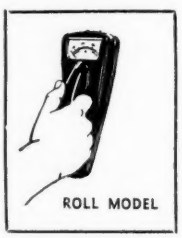
So far the machine has not yet been applied to the manufacture of waterproof garments, but its success in other fields justifies the hope that it will not be long before the waterproof industry also adopts it.

Company News

W. T. Henley's Telegraph Works Co., Ltd., recently acquired a new factory at Birtly, Durham. The company, manufactured the important H.A.I.S. cable used in operations to combat the magnetic mine.

The formation of De La Rue Extrusions, Ltd., with a capital of £50,000 in 50,000 shares of £1 each, has been reported. The company is to manufacture and deal in plastic articles and substances (whether produced by extrusion or otherwise), molding materials, molded goods, building materials, filling compounds, fire- and acid-proof materials, electrical and insulating goods and materials, chemicals, colors, etc. The directors are: B. C. Westall, director of Thos. De La Rue & Co., Ltd.; C. G. R. Ashton, director of Thos. De La Rue Plastics, Ltd., and De La Rue Insulation, Ltd.; H. P. Bridge, director of the last two companies; J. Eerdmans (Dutch), also director of those two companies; C. E. S. A. M. Stackhouse (American), president and secretary of Extruded Plastics, Inc.

De La Rue Insulation has arranged with Metropolitan Vickers



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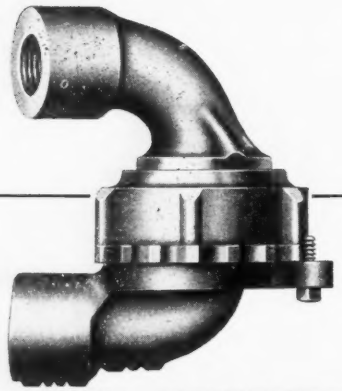

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FLEXO JOINTS are reasonable in first cost, have long life and their maintenance cost is negligible. They are really trouble proof; just 4 simple parts—no springs, delicate parts or ground surfaces. They are equally as simple to install and service.

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ANTIMONY
FOR RED RUBBER

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Co., Trafford Park, Manchester, to take over as from October 1, 1945, the latter's section which manufactures laminated plastics marketed under the trade name "Traffolyte." The De La Rue company has a factory under construction where Traffolyte will be produced in future, but until this is completed, the goods will continue to be made at the Trafford Park plant.

The Northwestern Rubber Co. of Litherland, Liverpool, recently became a British limited company and no longer operates under American law. The company's name has been changed to Northwestern Rubber Co., Ltd. Its stated objects are to carry on business of manufacturers of rubber, reclaimed rubber and allied products, and goods made therefrom, dealers in rubber and vulcanized and unvulcanized wares and merchandise, etc. The capital is given as £120,000.

Technoplastics, Ltd., is a new company with headquarters in Edinburgh and capital of £20,000 formed to manufacture and deal in thermosetting and thermoplastic materials, resins, condensation products, gums, etc.

Major Francis B. Shaw, R.T.R., has been released from the Army and has rejoined the machinery manufacturing firm, Francis Shaw & Co., Ltd., Corbett St., Manchester 11.

Kaufman, Heyworth & Co., Ltd., London House, 3 New London St., London E.C. 3, has announced that as Robert Paul Kaufman has changed his surname to Marchant, the company has taken the opportunity to change its name to include the names of the three directors: Marchant, Heyworth & Swift, Ltd. No other changes, however, have been made in the organization.

SWEDEN

Comparative studies of the performance of tires made from German Buna rubber and from natural rubber were carried out by the Stockholm bus system in 1944. It was found that bus tires made from Buna were markedly inferior to those made from natural rubber. The average life of Buna tires scrapped by the bus company in 1944 was 24,385 kilometers, while the average life of tires scrapped during 1943 and evidently made from natural rubber was more than four times that figure.

FAR EAST

MALAYA

Rehabilitation Plans Progressing

Various measures to further both the rehabilitation of Malaya and of the Malayan rubber industry are now effective. In connection with the rehabilitation of the country, it is announced that Sir Harold MacMichael, High Commissioner for Palestine, has been requested by the government to proceed to Kuala Lumpur, Malaya.

The Malayan Rubber Estate Owners Co., newly formed in London to carry out a scheme for putting the rubber planting industry in Malaya on its feet again, reports goods progress. Latest available information states that 377 estate owners, representing 1,321,933 planted acres have now become members, which means that practically all the estates with headquarters in London which could have joined the scheme, did so; but a large number of estate owners domiciled in the Far East have not yet been able to follow suit. The company has a new board including the following: Sir John Hay (chairman), F. D. Ascoli, T. B. Barlow, H. F. Copeman, A. P. Hadow, H. B. Egmont Hake, C. J. Jenkins, Sir Eric Macfadyen, F. E. Maguire, and J. L. Milne. The board appointed F. W. Jones to be the company's chief executive officer in London.

Rubber Purchasing under One Authority

The British Military Administration in Singapore has appointed the Malayan Rubber & Produce Buying Unit to be the sole owners of rubber in Malaya—presumably the rubber left behind by the Japs. Official information reveals that early in October 25,000 tons of rubber in bulk were discovered in North Johore, 8,000 tons in South Johore, and about 350,000 gallons of latex. According to a Japanese estimate, there should be an additional 42,000 tons of rubber ready for export in parts of Malaya outside of Johore. The government took over the rubber at a price of 36 Straits cents a pound (about 20¢ U. S. currency).

It is interesting here to quote a few London opinions called forth by this transaction. The rubber correspondent to the *Financial News* considers it doubtful whether Malayan producers could operate at a profit at this figure even with full crops. While T. B. Barlow, chairman of the Rubber Growers' Association, a director of the Malayan Rubber Estate Owners Co., and chairman of the Badek Rubber Estate, Ltd., considers 36 cents a pound for first quality rubber "an artificially low price."

If one considers the present situation in Malaya as reported by eye-witnesses, one is inclined to agree that at least until rubber production is on a fairly normal basis again, the price will indeed prove low for many estates.

Condition of Plantations and Factories

Bit by bit a picture of Malayan conditions begins to emerge. By all accounts, damage to the plantations themselves has been less than was at first feared might be the case. In some areas trees were apparently not touched at all, and the rest the trees thus had should prove highly beneficial even where neglect has encouraged dense growths of weeds. Indeed, according to one school of estate practice, such undergrowth—in the case of mature trees at any rate—helps maintain favorable soil conditions for *Hevea*, which is reflected in superior bark conditions. Less encouraging is the news that large stretches of young rubber have been cut out to make place for Jap Victory gardens. If these trees were valuable young budgrafts or clonal seedlings, the damage may prove to be serious.

If, on the whole, plantations themselves appear to have suffered little, the factories and other buildings on estates seem to have been thoroughly stripped of machinery, appliances like refrigerators, geysers (for heating bath water), and electric fans, to say nothing of furniture. Replacements will take time, thereby delaying operations.

But apart from all this, is the problem of labor. The planter returning to Malaya is likely to find his imported coolies scattered and available labor far less tractable than formerly, especially where a Communist element prevails. At present there is, of course, also a lack of experienced estate managers and assistants, but this situation will soon be remedied by the arrival of about 300 planters scheduled to land in Singapore by the end of the year.

Another important obstacle to the operation of estates now is the severe shortage of transport in Malaya. To relieve this, Washington has been requested to relax restrictions on lend-lease equipment.

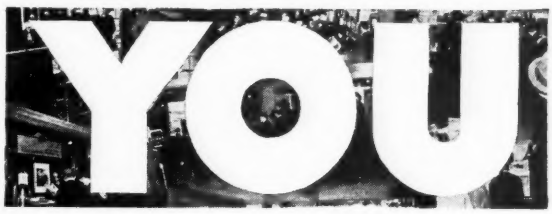
FAR EAST NOTES

With an eye on Indian plans for industrial expansion, an Indian publication directs attention of prospective Indian industrialists toward Australia as a possible source for supplying various types of machinery including such as are required for the manufacture of plastics, electric wires and cables, rubber goods, chemicals, sporting goods, and bicycles.

Following a conference in Bombay last July, an All-India Plastics Manufacturers' Association recently was formed. The Indian Government has been urged to aid the new industry by facilitating the importation of necessary plant. The need of adequate training of additional scientists and technicians was emphasized, and it was pointed out that this would require the provision of greater facilities in India as well as the sending of students to the United States and the United Kingdom.

The press states that Java was ready to ship a cargo of 8,500 tons of natural rubber to the United States on the American Victory Ship, *Canton Victory*, from Batavia's port of Tandjong Priok. Altogether about 15,000 tons of crude rubber are said to be available for immediate shipment from that port, while undetermined amounts are waiting at other ports.

how chemistry's war-born progress affects



NEVER before have such profound changes taken place in chemical industry—with so few details generally publicized—as in the war years just past. New techniques, new materials, new equipment, whole new chemical industries have sprung into being. Much has happened which, for security reasons, could not be revealed until now.

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Editor's Book Table

BOOK REVIEWS

"Plastics in Practice. A Handbook of Product Applications." John Sasso and Michael A. Brown, Jr. McGraw-Hill Book Co., Inc., New York, N. Y. 1945. Cloth, 7½ x 10½ inches. 192 pages. Price $4.

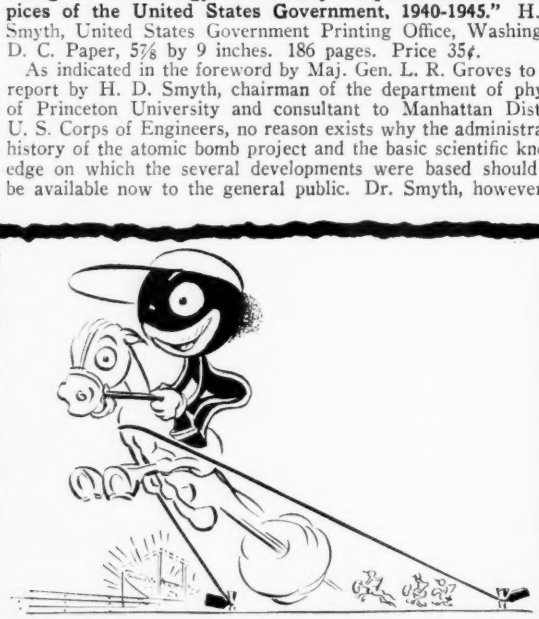
The authors of this book have done a commendable job in assembling information for the reader who is not an expert in plastics, but who, as an engineer, designer, or businessman, is interested in plastic materials primarily from the viewpoint of what use they may be to him in improving his product increasing his sales, and lowering his costs. To answer these questions in the quickest and most practical manner, the properties of the various plastics and fabricating methods are discussed in direct relation to proved, successful commercial uses. More than 100 case studies have been assembled, each typifying the use of a particular plastic or fabricating method.

A brief introductory section sets up a frame of reference by including with the short explanation of the various groups of thermosetting and thermoplastic materials and their processing methods, specific case numbers, which in the next section of the book show how, for example, cotton-flock-filled phenolic plastic compound is used for the compression-molded vacuum-cleaner motor hood or how vinyl chloride polymers and copolymers are used for wire and cable insulation. These case histories are followed by a section on new developments which describes both new materials and new methods. Included here are discussions of nylon and new styrene polymers and copolymers for molding, and a new styrene elastomer, the use of low-viscosity vinyl butyrals combined with GR-S for shoe soles, silicone resins, post-formed laminates, pulp-preform molded parts, and resin-paper sheets.

Realizing the necessity of defining what was meant by the word "plastics" in planning the coverage of this book, the authors arrived at the following definition as far as their book was concerned: "Synthetic organic polymers processed into parts or articles by molding, laminating, casting, machining, not including surface finishes, fibers or those compounds commonly known as synthetic rubber."

"A General Account of the Development of Methods of Using Atomic Energy for Military Purposes under the Auspices of the United States Government, 1940-1945." H. D. Smyth, United States Government Printing Office, Washington, D. C. Paper, 5⅞ by 9 inches. 186 pages. Price 35¢.

As indicated in the foreword by Maj. Gen. L. R. Groves to this report by H. D. Smyth, chairman of the department of physics of Princeton University and consultant to Manhattan District, U. S. Corps of Engineers, no reason exists why the administrative history of the atomic bomb project and the basic scientific knowledge on which the several developments were based should not be available now to the general public. Dr. Smyth, however, in



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(FOR FURTHER DETAILS, SEE AD ON PAGE 304)

his preface states that the average citizen cannot be expected to understand clearly how an atomic bomb is constructed or how it works, but there is in this country a substantial group of engineers and scientific men who can understand such things and who can explain the potentialities of atomic bombs to their fellow citizens. The present report has been written for this professional group. In view of the considerable national and international controversy on the subject of atomic energy at the present time, this report, even as incomplete as it is, should be required reading and in fact a civic responsibility for all technically trained persons as indicated by Dr. Smyth.

In addition to the refresher course in radioactivity and nuclear physics provided in the first two chapters, the several appendices provide a further discussion of some of the basic facts and methods used, such as methods of observing fast particles from nuclear reaction, delayed neutrons from uranium fission, and a brief supplementary description of the first self-sustaining chain reacting pile as erected by Fermi and his collaborators in the Fall of 1942.

The main body of the report in describing the administrative and policy problems and decisions in connection with the work on atomic bombs enables the reader to bring himself up to date on the tremendous scope of this great effort with regard to personnel, industrial and governmental organizations involved, and the presently existing plants and equipment for atomic bomb production and research.

"The Story of the Dutch East Indies." Bernard H. M. Vlekke. Published by Harvard University Press, Cambridge, Mass. Cloth, 5¾ by 8½ inches. 233 pages. Illustrations. Index. Price $3.

Two years before the appearance of "The Story of the Dutch East Indies" the Harvard University Press published Dr. Vlekke's "Nusantara, a History of the East India Archipelago," a scholarly work received with acclaim by the critics. The publishers, we are told, felt that there was also need of a simple narrative calculated to appeal to the general reading public and to the members of the Armed Forces in particular. So the present book, based on the earlier, more erudite work, makes its timely appearance.

It pictures for us in interesting fashion the beginnings of Indonesian civilization and the dominance of Hindu culture which, introduced at the beginning of the Christian era, fostered by successive waves of Hindu immigrants and under various Hindu and Hindu-Javanese dynasties, flourished until close to the end of the Fourteenth Century when, with the downfall of the last and most glorious kingdom of Java, the Empire of Madjapahit, it was destroyed and replaced by Mohammedanism.

We learn of the growing power of Islam, of the appearance in the Indies of the Europeans—first Marco Polo, much later the Portuguese, and in their wake the Dutch and the British and the inevitable rivalries that resulted. We watch Batavia rise under the efforts of Jan Pieterszoon Coen; the formation of the Dutch East India Co., and the rise and fall of the commercial empire it built. We follow the maze of historical events which led to the taking over of Java by the British in 1811, their withdrawal again five years later, and of Raffles' tireless, often fruitless, but finally successful attempts to gain for the British a foothold in the Malacca Strait.

With the introduction of the "Culture System" about 1831, came the dawn of a new era for Java, when the export crops began to be developed—sugar, coffee and indigo, tea, tobacco, oil palms, and cinchona.

Dr. Vlekke sketches for us the beginnings of Indonesian nationalism which, unfortunately, has now flared into open rebellion; he explains the Japanese attempts toward economic domination and political penetration of Java in the 1930's, and finally brings us to the actual invasion and occupation of the Indies.

In short, the little book gives a comprehensive, highly informative, and colorful story of the Indies, which is enhanced by well-selected illustrations and clear maps. It may therefore appear to be captious to point to a few odd omissions. In his discussion of the efforts of the liberals about 1860 to improve the lot of the Indonesians, for instance, Dr. Vlekke refers to the part played by a novel; he briefly states the nature of the book, gives the name and even the pseudonym of the author, but does not divulge the title of the book itself!

Again, he dismisses the important subject of rubber cultivation in a few strangely inept sentences, concluding with the remark: "It is interesting that as late as 1914 Java and Sumatra together produced not more than 7500 tons of this commodity," which is indeed interesting, but only to those who happen to know that the Netherlands India today is capable of producing about 650,000 tons of rubber a year; to the many more who are ignorant of this fact, the statement quoted cannot mean much, for Dr. Vlekke does not mention present productive capacity.

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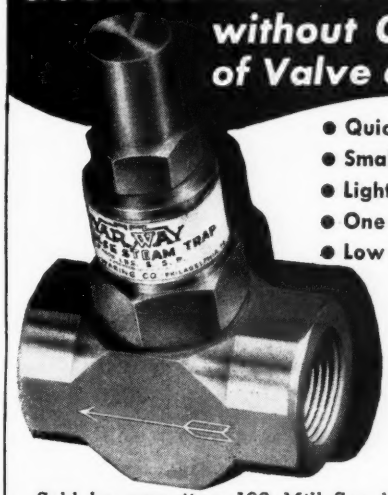

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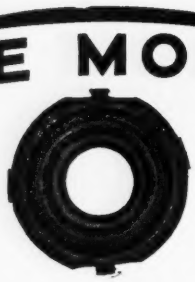

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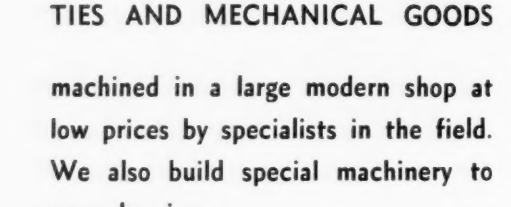

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NEW PUBLICATIONS

"Mixing Comparison of Philblack A and EPC Black." Bulletin No. 2, November 1, 1945. Philblack Division, Phillips Petroleum Co., Akron, O. 2 pages. A mixing comparison of Philblack A and EPC black, including power consumption, maximum power requirements, total power consumption for complete incorporation, Mooney plasticity results, and surface appearance, is presented in this bulletin. It is emphasized that the rapid rate of incorporation and optimum reenforcement attained by the use of Philblack A is advantageous since the breakdown of the GR-S can be held to a minimum by the use of shorter mixing times.

"Armstrong's Gaskets, Packings, and Seals." Armstrong Cork Co., Lancaster, Pa. 12 pages. The Armstrong line of gaskets, packings, and seals, including synthetic rubber compounds, cork-and-synthetic rubber compositions, and cork-and-natural rubber compositions, is described in this booklet. The value of the controlled compressibility of the cork-and-rubber compositions is stressed. Tabulations provide information on the ingredients, characteristics, available forms, typical uses, and government specifications for the various rubber comopsitions. Many illustrations of typical uses of these materials are also contained in this booklet.

"Jar Rings for Use in Home Canning, Their Testing and a Proposed Specification." Rolla H. Taylor, Helen G. Wheeler, and Frances Benedict, National Bureau of Standards, Washington, D. C. Miscellaneous Publication M181. 20 pages. This booklet relates the methods and tests used in an investigation made by the Bureau of Human Nutrition and Home Economics, United States Department of Agriculture, in collaboration with manufacturers and the National Bureau of Standards, conducted to determine whether satisfactory jar rings could be made from reclaimed rubber without the admixture of new natural rubber. As a result of their work, they formulated a specification for jar rings, applicable to all rings, whether made from mixtures of new and reclaim, reclaimed rubber alone, or from synthetic rubber, which is included in this booklet.

Publications of E. I. du Pont de Nemours & Co., Inc., Wilmington, Del. **"Flexibility of Films from Neoprene Latex."** BL-197. 2 pages. **"The Effect of Increasing the Time of Cure at 287° F. on Some of the Properties of Two Neoprene Vulcanizates."** BL-200. 5 pages. **"The Neoprene Latices."** BL-201. 12 pages. **"Du Pont Select Rubber Colors in CV Cures."** BL-203. 4 pages. Instructions for preparing neoprene compounds that will not stiffen on long storage at normal temperatures are given in BL-197. Three graphs included with BL-200 summarize the effect of increased cure on stress-strain properties, tear resistance, resilience, permanent set, compression set, swell in oil, and resistance to cut growth on a pure gum and an EPC black loaded compound. BL-201 summarizes properties and uses of the four types of neoprene latices, 571, 571 concentrate, 572, and 60, being made at the present time. Standard basic compounds and a reference list of other Du Pont literature on neoprene latices are included. BL-203 presents in tabular form the results of observations on the stability of Du Pont select rubber colors cured at 388° F. for various periods up to eight minutes.

"Modern Coatings Based on Bakelite Resins." Bakelite Corp., 300 Madison Ave., New York 17, N. Y. 20 pages. This booklet has been prepared for the architect, product designer, the engineer and plant executive, the builder and maintenance superintendent, to help them acquire a new viewpoint on coatings and a greater appreciation of their enlarged scope of service from the standpoints of improved protective qualities, a longer useful life, and expanded decorative and product styling possibilities. The booklet is divided into two sections; one describing the usefulness of the new properties available through modern coatings and one a description of the various Bakelite resins used in the coating industry. Coatings in this booklet are of the type applied to rigid structures.

"Synthetic Organic Chemicals." Carbide & Carbon Chemicals Corp., 30 E. 42nd St., New York 17, N. Y. Twelfth Edition. 120 pages. Indexed. This booklet presents in condensed form up-to-date information on the properties, uses, and specifications of more than 160 products sold by this corporation. This edition includes data on 34 products not included in previous editions and contains new chapters on acetals, sulphur compounds, polyethylene glycols, hydroxyethyl cellulose, and plasticizers. Revised tables of physical properties also contain shipping information and specifications of particular value to purchasing agents.

"Special Problems in Bonding and Coating." Angier Products, Inc., 120 Potter St., Cambridge 42, Mass. 16 pages. This well-illustrated and well-done booklet tells the story of special problems in bonding and coating of leather, rubber, fabric, metal, wood, plastic, paper, and glass, handled by Angier Products, Inc., during the war production period. Illustrations of the company's laboratory equipment used in the development of special cements or compounded latices of rubbers or resins are alternated with illustrations of the wartime uses to which these bonding and coating agents were put. It is pointed out that as natural rubber again becomes available in quantity, its usefulness will be increased by Angier Products backlog of technical information obtained through the use of synthetics during the war years.

"Witcarb R—Rubber Reenforcing Pigment." Witco Chemical Co., 295 Madison Ave., New York 17, N. Y. Bulletin 45-2. 32 pages. In this bulletin, data on the behavior of Witcarb R in GR-M, GR-I, Hycar, Chemigum, Perbunan, reclaim, and reclaim-GR-S mixtures have been presented. Various loadings of Witcarb R have been studied, and this material has been compared with other inorganic and carbon black pigments at a loading of 100 parts by weight. The results indicate that Witcarb R has a definite reenforcing action, improving tensile, tear, and abrasion resistance of the elastomer formulations tested. In many formulations the improvement in tensile and tear brought about by Witcarb R is comparable to the improvement obtained with furnace carbon black of similar surface area, but the stiffness of the Witcarb R stocks is considerably less.

"Textile Fibers—An Engineering Approach to Their Properties and Utilization." Harold DeWitt Smith. Edgar Marburg Lecture, 1944, presented before the forty-seventh annual meeting of the American Society for Testing Materials. 66 pages, illustrated. The central theme of this booklet is the engineering approach to the evaluation of textile fibers. Dr. Smith describes the evolution of the textile industry which started in the stone age with the use of vines for rope to our numerous present-day use of textiles. However in that length of time the greatest difference brought about has been the greater length and fineness of the fiber, and therefore to a degree in tactile and visual qualities. There have been discovered in that period of time but six fundamental types of spinnable natural fibers, each distinctive with respect to its molecular and morphological architecture. It seems unlikely that any new fibers will be discovered in the future. However mankind has initiated a second great textile research project, the *creation of textile fibers.* It is with this phase that Mr. Smith deals mainly. He discusses the evaluation of textile fibers, the mechanics of textile fabrics, and the influences of fiber material, fiber dimensions, and fiber shape on fiber behavior. He tells of the limitless possibilities in the offing now that the new philosophy of textiles has evolved, the essence of which is "that fibers can be designed to meet specific textile wants rather than that textile wants must be designed to utilize immutable fiber 'personalities.'" Also included is a proposed recommended universal yarn numbering system.

"Statex B for Natural Rubber Carcasses." Bulletin No. 134. Binney & Smith Co., New York, N. Y. 2 pages. Comparative compound formulae for natural rubber carcass stocks containing zinc oxide and Statex B together with comparative physical and dynamic properties results are given to explain the advantage of Statex B in this type of compound. The outstanding advantages reported are: greatly improved flex life, appreciably lower weight of the carcass compound, and economy—5% to 10% lower volume cost. Throughout the war Statex B was in regular use in natural rubber breaker, cushion, and top ply stocks for heavy-duty tires, it is stated.

BIBLIOGRAPHY

Gel as a Definitive Property in GR-S Technology. L. M. White, E. S. Ebers, G. E. Shriver, and S. Breck, *Ind. Eng. Chem.*, Aug., 1945, p. 770.

Tire Balance. C. L. S. Gilford and J. H. Hardman, *Trans. Inst. Rubber Ind.*, Apr., 1945, p. 181.

Physical Examination of Brass Deposits. S. Buchan and W. D. Rae, *Trans. Inst. Rubber Ind.*, Apr., 1945, p. 205.

Oil Seals for Rotary Shafts. J. Forrest, *Trans. Inst. Rubber Ind.*, Apr., 1945, p. 212.

The Role of Oxygen in the Plasticization of Rubber. D. F. Twiss, *India Rubber J.*, June 30, 1945, p. 3; July 7, p. 8.

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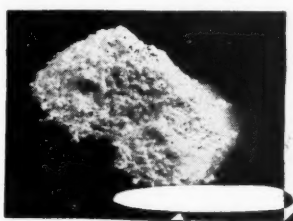

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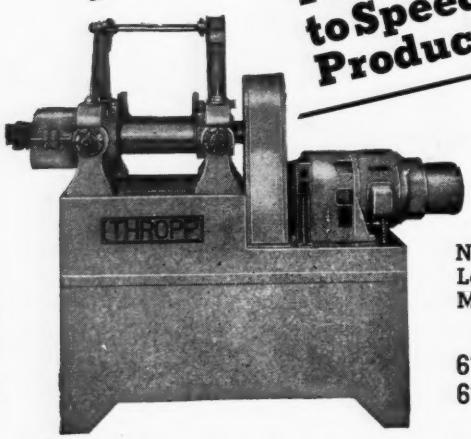

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A Key to Industrial Prosperity. T. J. Drakeley, *India Rubber J.*, July 14, 1945, p. 7; July 21, p. 11; July 28, p. 6.

Is the British Rubber Industry Efficient? F. Jones, *Rubber Age (London)*, June, 1945, p. 98; July, p. 130.

Rubber Age (London), June, 1945, p. 102.

Credit to the Government — Perhaps! "Technician,"

Further Views on the British Rubber Industry. "Technician," *Rubber Age (London)*, July, 1945, p. 124.

Cis and Trans Isomerism in Synthetics. Cyclo-Synthetic Rubbers. W. S. Penn, *India Rubber J.*, Aug. 11, 1945, p. 3.

War Developments in the Coatings Industry. L. Auer, *Chemical Industries*, Aug., 1945, p. 257.

Neoprene. A Comparison with Natural Rubber. E. H Krismann, *Can. Chem. Proc. Ind.*, July, 1945, p. 483.

The Rugosimeter. An Instrument for Measuring Surface Roughness of Calendered Sheet Rubber. M. Mooney, *Ind. Eng. Chem. (Anal. Ed.)*, Aug., 1945, p. 514.

Rubber from Ficus maroma. G. Dalma, *Industria y quím.*, 7, 103 (1945).

The Nature of Dynamic Double Refraction in Rubber Solutions and the Shape of Rubber Molecules. V. N. Tsvetkov, A. Petrova, *J. Tech. Phys. (U.S.S.R.)*, 14, 289 (1944).

Factory Hazards in the Rubber Industry and Their Control. C. Tanne, *Gummi-Ztg.*, 55, 541, 558, 575 (1941).

Theory of the Calender Effect in Rubber-Like Materials. L. Bilmes, *Trans. Faraday Soc.*, 41, 81 (1945).

Reactivity of Isoprenic and Analogous Hydrocarbons toward HCNS and $(CNS)_2$. R. F. Naylor, *J. Chem. Soc.*, 247 (1945).

Determination of Total Sulphur in Rubber. C. L. Luke, *Ind. Eng. Chem. (Anal. Ed.)*, 17, 298 (1945).

The Effect of Prooxygenic Compounds on Vulcanized Rubber. P. Chovin, *Compt. rend.*, 212, 797 (1941).

Wave Equation for Finite Elastic Strains. A. Nadai, *J. Applied Phys.*, 16, 313 (1945).

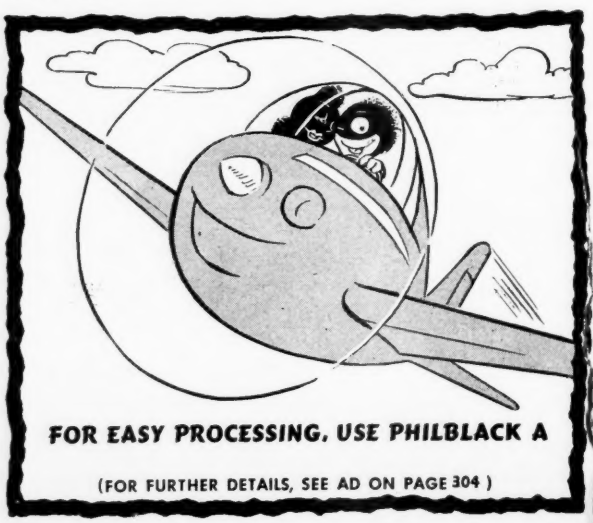
Ursolic Acid and Paraffin Hydrocarbons from Cryptostegia Leaves. J. W. White, Jr., and F. R. Senti, *J. Am. Chem. Soc.*, 67, 881 (1945).

Rayon Cord Tire Development—A Major Wartime Achievement—"Enka Featured High-Tenacity Yarns for Tires since 1938," J. A. Van Laer; "'Cordura' Blazed Way in High-Tenacity Yarns," F. R. Brown; "Integration of Rayon Tire Yarn, Cord and Fabric Production Expedited by Continuous Process, Uptwisting and Electronic Twist Setting," H. B. Kline; "American Viscose Corp.'s High-Tenacity Rayon Tire Yarn Program," W. C. Appleton; "Synthetic Rubber Proved Backbone for Tires; Weftless Calendering Newest Advance in Tire Cord," E. T. Lessig; "Gates Rubber Co. Explains Treating of Rayon Tire Cord"; "Chemcot—Pure Cotton Cellulose in Sheet Form for Tires," *Rayon Textile Monthly*, July, 1945, p. 81.

The Application of Synthetic Resins to Textile Fibers and Fabrics. D. H. Powers, *Rayon Textile Monthly*, July, 1945, p. 107.

Conversion of 2, 3-Butylene Glycol to 1, 3-Butadiene by Pyrolysis of Diacetate. S. A. Morell, H. H. Geller, E. C. Lathrop, *Ind. Eng. Chem.*, Sept., 1945, p. 877.

Pilot-Plant Conversion of 2, 3-Butylene Glycol Diacetate to 1, 3-Butadiene. L. E. Schniepp, J. W. Dunning, H. H. Geller, S. A. Morell, E. C. Lathrop, *Ind. Eng. Chem.*, Sept., 1945, p. 884.



FOR EASY PROCESSING, USE PHILBLACK A

(FOR FURTHER DETAILS, SEE AD ON PAGE 304)

Dominion of Canada Statistics

Imports of Crude and Manufactured Rubber

	Sept., 1945 Quantity	Sept., 1945 Value	Sept., 1944 Quantity	Sept., 1944 Value
UNMANUFACTURED				
Crude rubber .....lbs.	502,022	$232,530	566,573	$231,767
Latex .....lbs.	1,000	355	18,660	5,471
Balata, crude .....lbs.	.....	.....	250	624
Gutta percha .....lbs.	.....	.....	1,664	517
Rubber, powdered, and waste .....lbs.	260,700	9,902	188,400	13,202
Rubber, recovered ....lbs.	1,995,900	140,042	1,845,200	124,966
Rubber substitute ....lbs.	372,800	82,274	260,800	89,933
TOTALS	3,132,422	$465,103	2,881,547	$466,480
PARTLY MANUFACTURED				
Hard rubber in rods or tubes .....lbs.	4,846	$3,389	.....	.....
Rubber thread, not covered .....lbs.	2,470	3,137	.....	.....
Totals	7,316	$6,526	.....	.....
MANUFACTURED				
Belting	.....	$23,629	.....	$34,751
Boots and shoes of rubber, N.O.P .....prs.	3,015	1,772	.....	.....
Cement	.....	23,301	.....	20,475
Clothing of waterproofed cotton or rubber.....	.....	582	.....	1,356
Druggists' sundries	.....	27,542	.....	25,017
Gaskets and washers.....	.....	14,051	.....	10,773
Gloves .....doz. prs.	426	1,578	1,160	4,749
Golf balls .....doz.	8	40	10	60
Heels .....prs.	1,000	78	662	53
Hose	.....	28,983	.....	21,490
Hot water bottles.....	.....	1,031	.....	339
Liquid sealing compound..	.....	249	.....	21,370
Mats and matting.....	.....	1,048	.....	320
Nipples, nursing ....gross	519	2,948	.....	.....
Packing	.....	6,653	.....	10,120
Raincoats .....no.	4	17	5,756	41,812
Tires, bicycle .....no.	545	760	240	320
Pneumatic .....no.	150	6,407	70	3,418
Solid, for automobiles and motor trucks..no.	6	249	20	817
Other	.....	1,046	.....	977
Inner tubes .....no.	82	434	24	332
Bicycle .....no.	428	320	144	99
Tire repair material.....	.....	4,044	.....	.....
Other Rubber manufactures	.....	135,721	.....	166,796
TOTALS	.....	$282,483	.....	$365,444
TOTALS, RUBBER IMPORTS	.....	$754,112	.....	$831,924

Exports of Crude and Manufactured Rubber

UNMANUFACTURED				
Crude rubber, including synthetic rubber ....lbs.	2,416,162	$893,163	3,143,112	$1,227,396
Waste rubber .....lbs.	2,423,600	33,830	3,136,500	41,143
TOTALS	4,839,762	$926,993	6,279,612	$1,268,539
PARTLY MANUFACTURED				
Soling slabs .....lbs.	23,658	$4,414	84,576	$16,843
MANUFACTURED				
Belting .....lbs.	173,004	$98,469	39,658	$21,706
Canvas shoes with rubber soles .....prs.	94,676	87,477	250	242
Boots and shoes of rubber .....prs.	178,831	325,497	113,194	286,652
Bathing caps	.....	180	.....	.....
Clothing of rubber and waterproofed clothing..	.....	13,133	.....	12,284
Heels .....prs.	185,428	27,854	118,465	13,169
Hose	.....	39,982	.....	21,277
Soles .....prs.	12,338	3,170	25,054	4,345
Tires, pneumatic .....no.	10,723	274,225	15,851	412,926
Other .....no.	819	18,547	3,036	121,139
Inner tubes .....no.	11,553	45,095	7,177	25,966
Insulated wire and cable..	.....	291,370	.....	86,013
Other rubber manufactures	.....	71,148	.....	8,358
TOTALS	.....	$1,296,147	.....	$1,014,077
TOTALS, RUBBER EXPORTS	.....	$2,227,554	.....	$2,299,459

"Converse 1945 Basketball Year Book." Twenty-fourth annual edition. Converse Rubber Co., Malden 48, Mass. 52 pages. **"A Dangerous First Step**—Reconversion Brings American Industry to the Crossroads." Automobile Manufacturers Association, New Center Bldg., Detroit 2, Mich. 20 pages. **"Experiments with Rubber in Mexico."** S. K. Lowe and Maurice Ries. Middle American Research Institute of Tulane University of Louisiana. 114 pages. **"Lists of Inspected Appliances Relating to Accident Hazard, Automotive Equipment, Burglary Protection."** September, 1945. Underwriters' Laboratories, Inc., 207 E. Ohio St., Chicago 11, Ill. 80 pages. **"A Yearbook of Railroad Information**—1945 Edition." Eastern Railroad Presidents Conference Committee on Public Relations, 143 Liberty St., New York, N. Y. 96 pages.

Regular and Special Constructions

of

COTTON FABRICS

Single Filling Double Filling

and

ARMY

Ducks

HOSE and BELTING

Ducks

Drills

Selected

Osnaburgs

Curran & Barry

320 BROADWAY

NEW YORK

Market Reviews

COTTONS & FABRICS

NEW YORK COTTON EXCHANGE WEEK-END CLOSING PRICES

Futures	Sept. 29	Oct. 27	Nov. 3	Nov. 10	Nov. 17	Nov. 24
Jan. ..	22.96	23.68	23.78	24.20	24.23	24.17
Mar. ..	22.94	23.76	23.82	24.16	24.16	24.02
May ..	22.91	23.75	23.85	24.14	24.04	23.85
July ..	22.70	23.60	23.68	24.00	23.83	23.62
Sept. ..	22.22	23.34	23.40	23.76	23.28	23.19
Dec. ..	21.94	23.13	23.20	23.53	23.90	22.87

THE November market was ruled by inflationary influences and broad speculative buying such as took place after the last war and during the late twenties. Demand was partially based on the lower-than-expected government crop estimate for November, which placed the cotton crop at 9,368,000 bales, less than the October estimate by 411,000 bales. Besides there is a strong feeling that final production of cotton will prove to be even smaller than forecast because of poor harvesting weather and the shortage of manpower. Also stimulating buying was the generally unexpected increase in mid-October parity prices, indicated heavy exports later in the season, and continued strength in outside commodity markets and stocks. However, traders became cautious when prices moved above government selling prices, and also tending to curb buying enthusiasm somewhat was the belief that administration and Congressional opposition is growing to the Pace parity bill, and that it will perhaps be pigeon-holed until next year. The 15/16-inch spot middling price recorded at 24.40¢ a bale on November 1 fluctuated until it rose to 24.81¢ a bale on November 14, then steadily declined to 24.65¢ on November 20. Prices then climbed steadily and finally closed at 24.97¢ on December 1.

The price of the January futures rose from a low of 23.72¢ a bale on November 2, to 24.23¢ on November 19, then fluctuated until the 26th when it turned upward, closing at 24.38¢ on December 1.

Secretary of Agriculture Anderson announced that there would not be any fixed cotton acreage quotas in 1946, and the Bureau of Agricultural Economics in the latest issue of "The Demand and Price Situation" points out that practically all factors favor increased acreage for 1946 —including labor, fertilizer, machinery, and other equipment. The CCC announced that the daily rate of cotton consumption during October dropped to a low point for a period of more than five years, 31,000 bales. However it is generally agreed that this year's production should just about equal annual consumption.

Mr. Anderson also formed a cotton exports advisory board composed of representatives of the industry. The government owns more than 6,000,000 bales of cotton acquired under grower price-support programs. The Secretary wishes to export to European and Far Eastern countries about 2,500,000 bales of low-grade cotton for which there is no market in this country.

Fabrics

The November gray cloths market remained inactive throughout the month, holding close on forward selling from the first, with opinion growing stronger that many mills and selling houses would adhere to that policy until the end of the year under probabilities of the tax burden being eased for 1946.

The industrial gray cloth market is mainly affected by unsound pricing, and trade is forced to accept finished cloth in many instances when gray cloth is preferred. With the greater part of gray cloth production moving to the finishing process in integrated mill operations much of the market is now tied up pending clarification of the converter mark-up in relation to the advances recently granted on gray ceilings. Much of the current production is now in the hands of finishers and is expected to remain there until converters' margins are finally set.

Among other factors creating this tight market situation are the imminent threats of strikes or of wage increases having to be given, the shift in loom operations, and the current manpower situation; there are now employed, approximately 2% less workers than on V-J Day.

Buyers seeking coating materials are finding their quest hopeless. The required cloths run from heavy weaves suitable for imitation leather to weaves for raincoats and table oil cloths. Some substitute fabrics have been made, and as there is no choice, buyers have had to make use of them. Only recently government-terminated-contract tent twill and duck were in free supply; however latterly the supply has been removed from the first-hand market, and efforts to find more are fruitless. Besides mills have sold ahead their natural duck and remaining tent twill production. These goods remain in the secondary market from which they can be obtained in the finished state or in manufactured form only. With current production hitting the low point for the year real recovery is not anticipated until after the first of 1946 or even until the second quarter. The price of 38½-inch, 64x60 print cloth has been changed to 9.906¢ a yard; while the prices of hose and belt ducks have been revised to 46¢ a pound and on 59-inch 1.85 drill to 26.621¢ a yard.

Amendment 10, MPR 478—Coated and Combined Fabrics—is designed to afford a vehicle for processing industry-wide surveys and assure industry-wide adjustments for those coated and combined fabrics which, owing to the restrictive uses of basic materials, have either been in large part or wholly out of production since 1941, but which now that hostilities have ceased are once more being made. These reconversion products are listed in Supplementary Orders 118 and 119.

Robert S. Wilson, former Director of Rubber Programs, stated in his report that the most serious component shortage in the field of general rubber products is in cotton broad-woven fabrics, controlled by M-317-a. This order gives preference to customers producing bags, to satisfy certain export requirements, and to manufacturers of low priced clothing; thus production of rubber mechanical goods, footwear, and other rubber items is curtailed by the resultant shortage of cotton textiles.

"The rubber industry has recommended that the controls established in this order be revoked, permitting equal treatment for all consumers of these cotton fabrics," he said.

Osnaburgs remained featureless in the market with two-thirds of all production still having to be turned over to bag manufacturers.

New York Quotations
December 1, 1945

Drills		
38-inch 2.00-yard	yd.	$0.195
50-inch 1.52-yard		.29
52-inch 1.85-yard		.23875
52-inch 2.20-yard		.20511
59-inch 1.85-yard		.26621
Ducks		
38-inch 2.00-yard S.F.	yd.	.22875
40-inch 1.45-yard S.F.		.3086
51½-inch 1.35-yard D.F.		.33875
72-inch 1.05-yard D.F.		.45476
Mechanicals		
Hose and belting	lb.	.46
Tennis		
51½-inch 1.35-yard S.F.	yd.	.33148
51½-inch 1.60-yard D.F.		.39218
Hollands — Rubber		
20-inch	yd.	.1225/.145
30-inch		.22 /.2575
40-inch		.245 /.29
Osnaburgs		
36-inch 2.94 Cl.	yd.	.1271
40-inch 2.11 P.W.		.1623
40-inch 2.65 Cl.		.1408
40-inch 3.65 Cl.		.18946
Raincoat Fabrics		
Cotton		
Bombazine 64 x 60, 5.35	yd.	.1375
Bombazine 64 x 56, 5.50		.1350
Print cloth, 38½-inch, 64 x 60		.9906
Sheeting, 40-Inch		
48 x 48, 2.50-yard	yd.	.182
64 x 68, 3.15-yard		.15556
56 x 60, 3.60-yard		.13333
44 x 40, 4.25-yard		.10941
Sheetings, 36-Inch		
48 x 44, 5.00-yard	yd.	.93
40 x 40, 6.15-yard		.7805
Tire Fabrics — Carded Peeler		
Builder		
17¼ ounce 60" 23/11 ply	lb.	.48
Chafer		
14 ounce 60" 20/8 ply	lb.	.48
9¾ ounce 60" 10/2 ply	lb.	.45
Cord Fabrics		
23/5/3, 1/16" cotton	lb.	.44
15/3/3, 1/16" cotton	lb.	.43
12/4/2, 1/16" cotton	lb.	.42
23/5/3, 1¼" cotton	lb.	.44
Lino Breaker		
8¼ ounce and 10¼ ounce 60"	lb.	.46

RECLAIMED RUBBER

DEMAND for reclaimed rubber continues very strong, with rationing of buyers by producers being practiced to spread the available supply. Release of reclaim for civilian goods for the first time in three years and the postwar emphasis on costs by the managements of rubber goods producing companies are considered to be the major causes for the extremely high demand. The industry is reported to be operating at about 80% of capacity because of the continuing shortage of manpower and the lack of interest of the available manpower in overtime work. The new "Specifications for Scrap Rubber" by the Rubber Reclaimers Association, effective September 21, 1945, insist on segregation of natural from synthetic rubber in all grades. It is understood that the reclaimers feel that since the labor cost of segregation by scrap dealers is much lower than the labor cost of segregation if undertaken by the reclaimer, the emphasis on segregation

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You'll find the wide and unusually complete range of fabrics we offer very interesting. The production of the 17 mills we represent is backed by 100 years of knowing how – complete research laboratory facilities and a competent staff of textile engineers. Our facilities are always at your service for the solution of problems involving the use of fabrics.

WELLINGTON SEARS COMPANY

65 WORTH STREET NEW YORK 13, N. Y.

by the scrap dealers is justified. The quality of reclaim is being maintained at the prewar level in spite of the voluntary or involuntary admixture of synthetic scrap.

Reclaimed Rubber Prices

	Sp. Grav.	¢ per Lb.
Auto Tire		
Black Select	1.16-1.18	7 / 7¼
Acid	1.18-1.22	8 / 8¼
Shoe		
Standard	1.56-1.60	7½/ 7¾
Tubes		
Black	1.19-1.28	11¾/12
Gray	1.15-1.26	12½/13½
Red	1.15-1.32	12¾/13
Miscellaneous		
Mechanical blends	1.25-1.50	5 / 6

The above list includes those items or classes only that determines the price bases of all derivative reclaim grades. Every manufacturer produces a variety of special reclaims in each general group separately featuring characteristic properties of quality, workability, and gravity at special prices.

Fixed Government Prices*

	Price per Pound	
	Civilian Use	Other Than Civilian Use
Guayule		
Guayule (*carload lots*)	$0.17½	$0.31
Latex		
Normal (*tank car lots*)	.26	.43½
Creamed (*tank car lots*)	.26¼	.44¼
Centrifuged (*tank car lots*)	.27¼	.45¼
Heat-Concentrated (*carload drums*)	.29½	.47
Plantation Grades		
No. 1X Ribbed Smoked Sheets	.22½	.40
1X Thin Pale Latex Crepe	.22½	.40
2 Thick Pale Latex Crepe	.22	.39½
1X Brown Crepe	.21¾	.38½
2X Brown Crepe	.21¼	.38¼
2 Remilled Blankets (Amber)	.21¼	.38¼
3 Remilled Blankets (Amber)	.21¼	.38¼
Rolled Brown	.18	.35½
Synthetic Rubber		
GR-M (Neoprene GN)	.27½	.45
GR-S (Buna S)	.18½	.36
GR-I (Butyl)	.15½	.33
Wild Rubber		
Upriver Coarse (crude)	.12½	.26½
(washed and dried)	.20¼	.37¾
Islands Fine (crude)	.14½	.28½
(washed and dried)	.22½	.40
Caucho Ball (crude)	.11½	.24¾
(washed and dried)	.19½	.37
Mangabiera (crude)	.08½	.19¾
(washed and dried)	.18	.35½

* For a complete list of all grades of all rubbers see Rubber Reserve Co. Circular 17, p. 169, May, 1943, issue.

FINANCIAL

American Viscose Corp., New York, N. Y. First nine months, 1945: net profit, $3,475,321, equal to $1.50 a common share, against $3,891,984, or $1.73 a share, in the same months last year; net sales, $87,618,030, against $79,102,706.

American Zinc, Lead & Smelting Co., Columbus, O., and wholly owned subsidiaries. Year ended September 30, 1945: net profit, $898,907, or 83¢ a common share, contrasted with $924,560, or 87¢ a share, in the preceding 12 months.

Belden Mfg. Co., Chicago, Ill. Nine months to September 30, 1945: net profit, $319,152, equal to $1.19 each on 265,300 shares, against $255,189, or $1.05 each on 241,547 shares, in the 1944 period.

Columbian Carbon Co., New York, N. Y. First nine months, 1945: consolidated net profit, $2,348,750, equal to $1.46 a share, contrasted with $2,315,426, or $4.31 a share, for the similar months of 1944; reserve for taxes and renegotiation, $1,950,000, against $1,225,000.

Crown Cork & Seal Co., Inc., Baltimore, Md., and wholly owned domestic subsidiaries. Nine months to September 30, 1945: net income, $1,858,743, equal to $2.45 each on 603,895 common shares, against $1,720,421, or $2.59 each on 517,625 shares, in the 1944 period; net sales, $52,206,001, against $47,434,832.

General Cable Corp., New York, N. Y. First nine months, 1945: net income, $1,590,015, against $1,700,232 in the same period last year; provision for federal taxes, $8,065,000, against $8,050,000.

General Motors Corp., Detroit, Mich. Third quarter, 1945: net income, $36,791,784, equal, after preferred dividends, to 78¢ a common share, contrasted with $42,227,409, or 90¢ a common share, in the corresponding period a year ago; sales $588,987,045, against $1,034,405,822.

Johnson & Johnson, New Brunswick, N. J., and subsidiaries. First nine months, 1945: net income, $2,410,000, equal to $2.44 each on 891,911 common shares; sales, $73,193,024.

Monsanto Chemical Co., St. Louis, Mo., and American subsidiaries. Nine months ended with September, 1945: net income, $4,101,205, equal to $2.71 a common share, against $2.23 a common share a year ago; consolidated sales, $73,387,559, 14% above the figure a year ago.

New Jersey Zinc Co., New York, N. Y. First nine months, 1945: net profits, $3,758,212, equal to $1.92 a share, against $3,997,663, or $2.04 a share, in the corresponding months of 1944.

Raybestos-Manhattan, Inc., Passaic, N. J., and domestic subsidiaries. Nine months to September 30: net profit, $1,022,344, equal to $1.63 a share, against $1,307,628, or $2.08 a share, in the same quarters last year.

Skelly Oil Co., Kansas City, Mo., and subsidiaries. First three quarters, 1945: net income, $5,359,247, equal to $5.46 each on 981,348 common shares, against $5,280,669, or $5.38 a share, in the like period a year ago.

Socony-Vacuum Oil Co., Inc., New York, N. Y. First nine months this year: consolidated net earnings, $34,000,000, equal to about $1.10 a share, contrasted with $40,000,000, or $1.28 a share, in the corresponding months of 1944.

Thermoid Co., Trenton, N. J., and subsidiaries. Nine months ended September 30, 1945: net profit, $552,346, equal to 77¢ a common share, contrasted with $581,180, or 86¢ a share, in the same period last year.

United Carbon Co., Inc., Charleston 27, W. Va., and subsidiaries. First nine months, 1945: net profit, $1,377,245, equal to $3.46 a share, contrasted with $1,489,724, or $3.74 a share, in the 1944 months; provision for taxes, $902,000, against $855,000.

Westinghouse Electric Corp., Pittsburgh 30, Pa. First nine months, 1945: net income, $13,673,825, against $16,711,097; net sales billed, $518,869,515, 15% under the '44 figure.

S. S. White Dental Mfg. Co., Philadelphia, Pa., and subsidiaries: First three quarters: net profit, $484,853, equal to $1.62 a share, against $519,481, or $1.74 a share, in the corresponding period of 1944.

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
Belden Mfg. Co.	Com.	$0.30	Dec. 1	Nov. 17
E. I. du Pont de Nemours & Co., Inc.	Pfd.	1.12½ q.	Jan. 25	Jan. 10
E. I. du Pont de Nemours & Co., Inc.	Com.	1.50 year-end	Dec. 14	Nov. 26
Endicott Johnson Corp.	Com.	0.75 q.	Jan. 1	Dec. 20
Endicott Johnson Corp.	4% Pfd.	1.00 q.	Jan. 2	Dec. 20
Flintkote Co.	Com.	0.45	Dec. 10	Nov. 21
Flintkote Co.	$4 Pfd.	1.00 q.	Dec. 15	Nov. 30
General Tire & Rubber Co.	Com.	0.25 q.	Nov. 30	Nov. 20
Goodyear Tire & Rubber Co. of Canada, Ltd.	Com.	0.63 q.	Dec. 31	Dec. 1
Goodyear Tire & Rubber Co. of Canada, Ltd.	Pfd.	0.62½ q.	Dec. 31	Dec. 1
Goodyear Tire & Rubber Co. of Canada, Ltd.	Com.	1.75 extra	Dec. 31	Dec. 1
Gro-Cord Rubber Co.	Com.	0.10	Dec. 20	Dec. 10
I. B. Kleinert Rubber Co.	Com.	0.25	Dec. 12	Dec. 1
Minnesota Mining & Mfg. Co.		100% stock	Nov. 26	Nov. 13
Mid West Rubber Reclaiming Co.	Pfd.	1.00 q.	Dec. 1	Nov. 20
Raybestos-Manhattan, Inc.	Com.	1.00 year-end	Jan. 4	Nov. 26
Seiberling Rubber Co.	$2.50 Pfd.	0.62 q.	Jan. 1	Dec. 15
Seiberling Rubber Co.	5% Pfd. "A"	1.25 q.	Jan. 1	Dec. 15
United States Rubber Co.	Com.	0.50	Dec. 10	Nov. 19
United States Rubber Co.	8% 1st Pfd.	2.00	Dec. 10	Nov. 19

SPI Labeling

(*Continued from page 397*)

article should be used to derive the best results from it.

As a service to manufacturers of plastics articles, SPI has issued a booklet entitled "Informative Labeling Guide," copies of which are now available. This Guide is the work of the informative labeling committee of the SPI, who in response to requests received from store buyers, as the result of surveys among retailers, and in compliance with expressions from users seeking more information about the properties and care of plastic articles, has drafted a set of suggestions for manufacturers. This

RUBBER RECLAIM PLAYS A PART!

In hundreds of finished rubber products ranging from stair treads to sponge rubber, raincoats to running boards, toy tires to truck tires, boots to batteries—Buffalo Reclaim has a vital role.

"TIOGA" and "MODIFIED 5203" are recommended as *typical* reclaims with *timely* application. Both products, as are all Buffalo Reclaims, are subject to rigid laboratory control. This assures high-quality standardized grades that bring speed and economy to compounding and processing.

TIOGA

DESCRIPTION:

Black Tire Carcass Reclaim with moderate carbon black content. It is rich in rubber and light in gravity.

USAGE:

Tire and belt carcass compounds—soft and hard rubber sponge—molded mechanicals, etc.

AVERAGE:

Specific Gravity	1.121
Rubber Hydrocarbon	62.31%
Carbon Black	8.41%

MODIFIED 5203

DESCRIPTION:

No. 1 Peel Reclaim of superior processing qualities—imparts excellent resistance to abrasion—possesses high black content.

USAGE:

Formulated for use with GR-S in treads and sidewalls of high grade tires—in covers for hose and belting—in footwear.

AVERAGE:

Specific Gravity	1.175
Rubber Hydrocarbon	48.53%
Carbon Black	22.04%

Samples, quotations and full particulars on request

U. S. RUBBER RECLAIMING COMPANY, INC.

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Guide contains basic suggested descriptions for labels to be used with products made from the various thermosetting and thermoplastic resin compounds according to the trade name for the various chemical classes now in commercial use.

"Vinylite" Production and Uses

VINYL thermoplastic resins and plastics under the trade name of "Vinylite" are marketed by the Bakelite Corp., a unit of the Union Carbide & Carbon Corp., New York, N. Y. The "Vinylite" resins are divided into several different types, each having its own general characteristics and physical properties, depending on its composition. Those available at present include the following: (1) copolymers of vinyl chloride and vinyl acetate: VYLF, VYHH, VYNS, and VYNW, differing by vinyl chloride content from 85 upward to 95%; (2) polyvinyl butyrals; (3) polyvinyl chlorides; (4) polyvinyl acetates.

The resins are manufactured at the Carbide & Carbon plant in South Charleston, W. Va., and delivered to the plastics compounding and processing plant of the Bakelite Corp. at Bound Brook, N. J. Here the resins in granular form are emptied into an airveyer and then transmitted by air pressure to storage tanks at the top of a multiple-storied building. Batches of resins of the proper predetermined composition nad molecular weight are blended in Werner and Pfleider mixers and then together with the proper quantity of resin, plasticizer, pigment, and stabilizer, transferred to Banbury mixers on a lower floor for compounding. Following this batches are given a final mixing and warm-up on a two-roll mill before being calendered. The calendering operation may be used to provide plastic sheets of various gauges for delivery to consumers or may be used as an additional processing operation prior to pelletizing some of the compounds where the consumer requests delivery in this form. Control testing of the production operations is carried out in laboratories in the production building, which also includes laboratories for development work on new compounds.

War uses have extended considerably the peacetime applications of "Vinylite" plastics. In the home, uses range from flooring to curtains and draperies, upholstery covers, bathroom and kitchen tiles, from parts of a radio set to the lens of a flashlight, to the toothbrush handle. Footwear, millinery, luggage, rainwear, containers of all kinds from the wardrobe to the kitchen, belts, suspenders and other accessories—these are only a few of the many consumer products on the immediate horizon to which "Vinylite" plastics bring numerous sales-stimulating characteristics in service and beauty, according to Bakelite Corp. In industry, this plastic material is finding acceptance in such uses as filters, chemical-resistant hose, wire insulation, and various other products.

Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont., has announced the following appointments: C. B. Cooper, assistant general sales manager; S. R. Skelton, assistant general sales manager; E. W. Hayter, manager of the advertising department; F. G. Willmott, manager of the dealer development department; G. F. Turner, manager of the automobile tire department; N. E. Irwin, manager of oil company sales department.

"Vinylite" Plastics Umbrella and Raincoat

CALENDAR

Dec. 4.	Ontario Rubber Section, and Toronto Branch, C.I.C. Royal York Hotel, Toronto, Ont., Canada.
Dec. 4.	Los Angeles Rubber Group, Inc. Christmas Party.
Dec.6-7.	Toy Manufacturers of the U. S. A., Inc. Annual Meeting, Hotel McAlpin, New York, N. Y.
Dec. 13.	Buffalo Rubber Group. Annual Christmas Party. Hotel Westbrook, Buffalo, N. Y.
Dec. 14.	Detroit Rubber & Plastics Group, Inc. Christmas Party. Detroit-Leland Hotel, Detroit, Mich.
Dec. 14.	New York Rubber Group. Christmas Party. Hotel HcAlpin, New York, N. Y.
Dec. 16-19.	American Institute of Chemical Engineers. Annual Meeting. Chicago, Ill.
Dec. 21.	Chicago Rubber Group. Christmas Party. Morrison Hotel, Chicago, Ill.
	Boston Rubber Group. Christmas Party. Copley Plaza Hotel, Boston, Mass.
1946	
Jan. 4.	Philadelphia Rubber Group. Benjamin Franklin Hotel, Philadelphia, Pa.
Jan. 12.	United States Golf Association. Annual Meeting. Waldorf-Astoria Hotel, New York, N. Y.
Jan. 22-24.	Bicycle Institute of America, Inc. Annual Meeting. Hotel Commodore, New York, N. Y.
Jan. 24-26.	The American Physical Society. Annual Meeting. Columbia University, New York, N. Y.
Feb. 3-8.	National Sporting Goods Association. 1946 Convention. Hotel New Yorker, New York, N. Y.
Feb. 5.	Los Angeles Rubber Group, Inc. Mayfair Hotel, Los Angeles, Calif.
Feb. 25-Mar. 2.	Twentieth Exposition of Chemical Industries. Grand Central Palace, New York, N. Y.
Apr. 8-12.	American Chemical Society. Atlantic City, N. J.

Polymer Corp.

(*Continued from page* 414)

Minister of Reconstruction, in reply to inquiries. The report said that the exact cost of production of synthetic rubbers was subject to the normal variations of any manufacturing industry, but based upon experience, a representative cost for the two types made at Sarnia has been established as follows: GR-S (Buna S type) 14.21¢ unit cost plus 2.75¢ replacement reserve, total 16.96¢ a pound; GR-I (Butyl type) 15.97¢ plus 2.75¢ replacement reserve, total 18.72¢ a pound.

Production from January 1, 1944, to September 30, 1945, was GR-S, 134,206,019 pounds; GR-I, 21,281,452 pounds, total 155,487,471 pounds. From January 1, 1945, to September 30, 1945, production was: GR-S, 62,381,081 pounds, GR-I, 15,081,487 pounds, total 77,462,568 pounds.

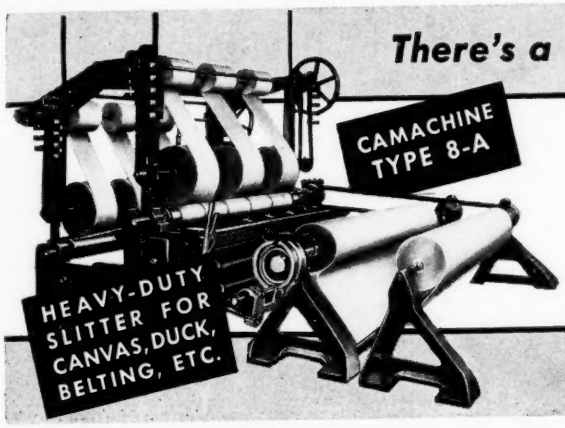
To September 30, 1945, Polymer released to War Assets Corp. buildings and machine tools to the value of $208,761. The report explained that the transfers were made at cost to Polymer. Direct sales and returns to manufacturers were made by Polymer to the value of $144,861.

It was revealed that directors of Polymer do not receive salaries, except John R. Nicholson, who earns $25,000 a year as managing director. The report added that the Polymer plant will be able to supply amply Canadian requirements during the next three years and also export rubber.

Polymer Corp. has entered into agreements to provide synthetic rubber to Denmark and other Scandinavian countries, according to Mr. Nicholson, who recently returned to Canada after a month in England and on the Continent. He said that one of the principal purposes of his visit abroad was to explore the markets for synthetic rubber in certain parts of Europe, and that the results had been encouraging.

A. R. Kaufman, president, Kaufman Rubber Co., Kitchener, Ont., in a statement issued November 24, offered to allow employes to purchase the plant and run it to their own satisfaction as a counter to demands from the United Rubber Workers of America for a new labor program in the Kitchener rubber industry. In the statement, directed to Local 88, which represents Kaufman employes, Mr. Kaufman said the firm was not interested in running a business and taking the risks, responsibilities, and worries involved for the exclusive benefit of employes. The statement added that it is a financial impossibility to comply with union demands without a substantial increase in the price of rubber footwear. It noted, further, that prices in rubber footwear in Canada are frozen and that a request to the Federal Department of Labor by the unions of three plants in Kitchener and one in Toronto for a price increase had been refused. The union program, placed before rubber plant managements in Kitchener, asked chiefly for a 20¢ an hour wage increase, a basic 40-hour week, and bonusing for night work and work on holidays.

R. C. Berkinshaw, general manager, Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont., was elected second vice president of the Canadian Manufacturers' Association at a meeting of the executive council in Toronto, November 20, to fill a vacancy created by the death of R. V. LeSueur, of Imperial Oil, Ltd.



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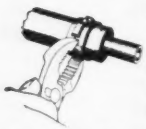

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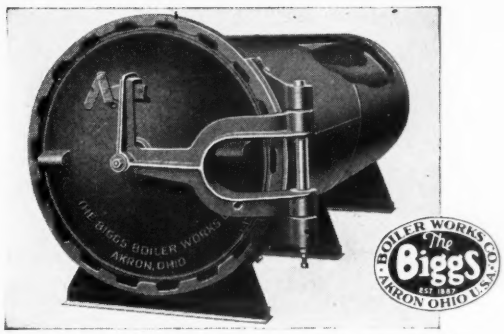

Fig. 17. Welded horizontal steam-jacketed vulcanizer with hinge-type quick-opening door; all sizes, various working pressures. No need of supporting inner shell with stay-bolts; less maintenance.

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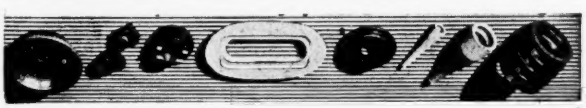

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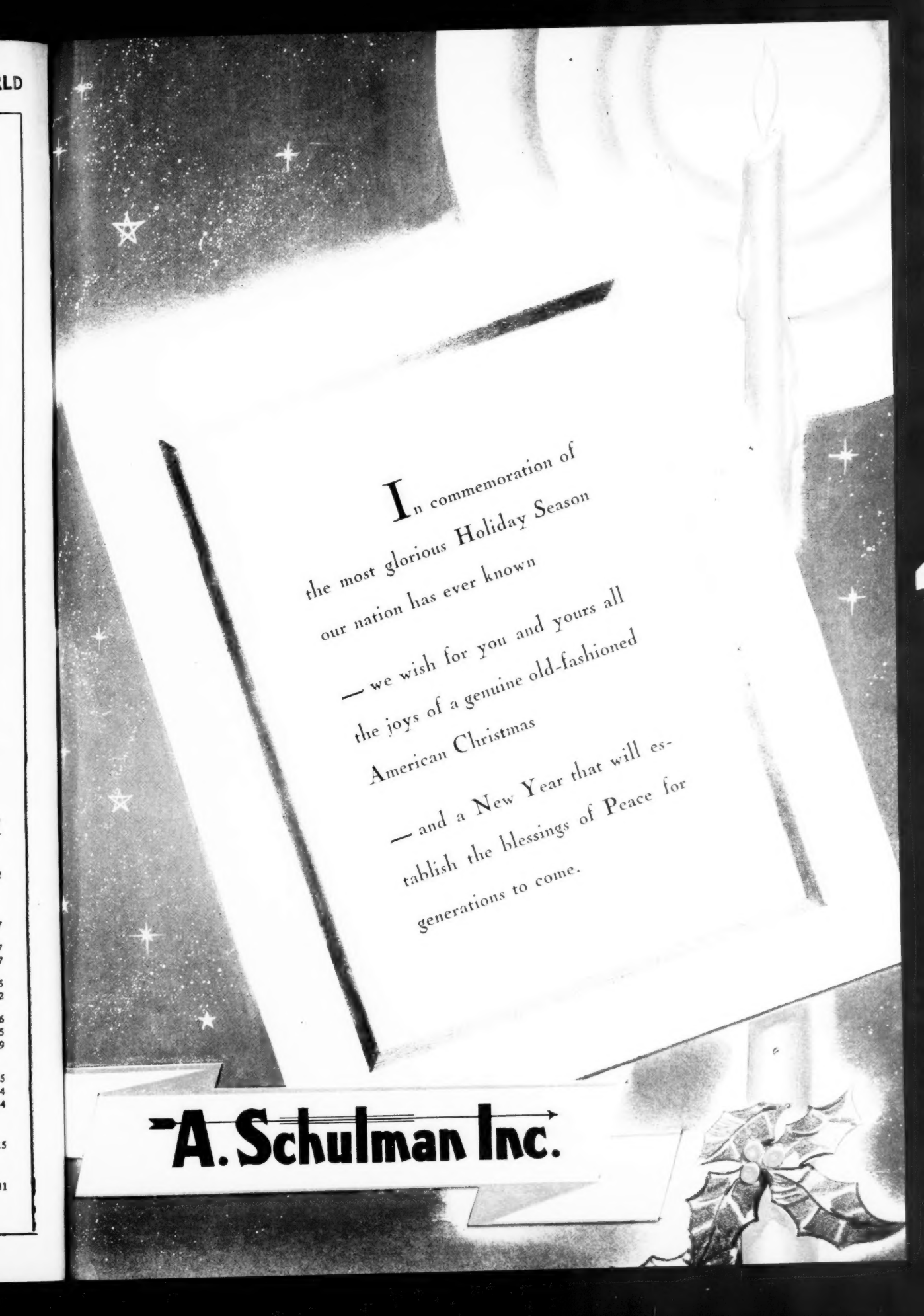
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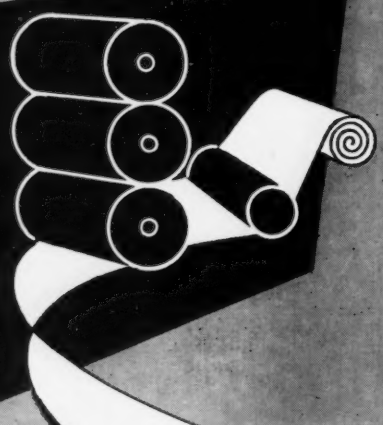

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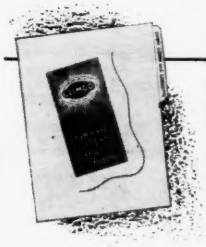

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